

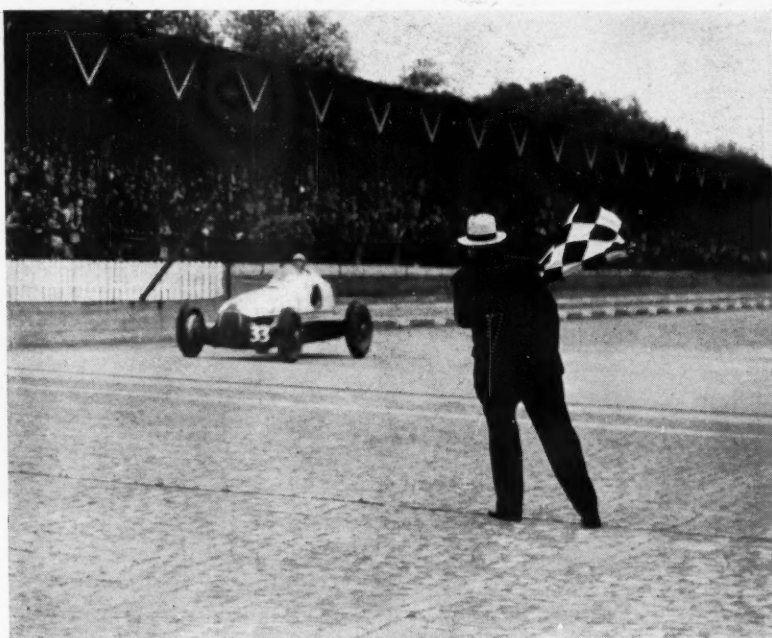
JUN 13 1940

MOTOR AGE

Engineering
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A CHILTON PUBLICATION

DEVOTED TO THE INTERESTS OF THE INDEPENDENT SERVICE STATION



Rex Mays, of Glendale, Cal., as he was flagged across the finish line at Indianapolis to win pole position for the big race by turning in a speed of 127.850 m.p.h. for the ten-mile qualifying run. Starter Seth Klein is handling the checkered flag.

In addition to the complete story on the Indianapolis race, this issue contains helpful information on windshield glass service—a story that may change all your ideas on car wear and performance—a new idea in credit business that may be of great value to you—and many other interesting features.

JUNE
1940



TOUGH BUT OH SO GENTLE

TOUGH ON OIL-PUMPING • GENTLE ON CYLINDER WALLS

From the very beginning Steel-Vent was marked for leadership. Its ability to stop oil-pumping and check cylinder wear under all sorts of cylinder conditions was quickly recognized by the trade as an outstanding ring achievement.

Unusually effective advertising to the consumer, plus intelligent, productive merchandis-

ing did the rest. Hastings Steel-Vent Piston Rings have rolled up one of the most sensational sales successes this industry has ever seen.

Another Reason

why Steel-Vents check the rate of cylinder wear: Steel-Vent oil control permits use of lighter oils, provides quick lubrication, checks rapid wear in cold motors.

HASTINGS MANUFACTURING COMPANY, HASTINGS, MICHIGAN

HASTINGS

STEEL-VENT PISTON RINGS

U. S. Patent Nos. 2,148,997, 2,172,409

Stop Oil-Pumping • Check Cylinder Wear

ASK US ABOUT "PREVENTIVE SERVICE"

As recommended by Collier's to its Readers

There are three angles to safety—the car, the driver, the traffic. Here's a triangle that is only as safe as its weakest side. All too often the weak side is the condition of the car. This sixth installment on Preventive Service covers "P.S." for safety.

Start your own SAFETY DRIVE with PREVENTIVE SERVICE



Start with Brakes

The first step in making the car safe is to make sure the brakes are in good condition. The brakes are the most important part of the car, and they must be in good condition to stop the car safely. The brakes should be checked regularly, and any worn parts should be replaced.

The Foundation of Hydraulics

The hydraulic system is the foundation of the brakes. It consists of a master cylinder, brake lines, and brake shoes. The master cylinder is the part that pushes the brake fluid into the brake lines. The brake lines carry the fluid to the brake shoes, which press against the brake drums to stop the car.

Friction and Traction

Friction and traction are essential for safe driving. Friction is the force that allows the tires to grip the road. Traction is the force that allows the car to move forward. Both are essential for safe driving, and they must be maintained at all times.

Moving with Caution

Moving with caution is the key to safe driving. This means driving slowly, staying alert, and being prepared to stop at any time. It also means avoiding distractions and not drinking and driving.

What Can You Do?

There are many things you can do to make your car safer. You can check the brakes regularly, replace worn parts, and make sure the tires are in good condition. You can also avoid distractions and not drink and driving.

Another View Point

Another view point is that safety is not just about the car, but also about the driver. A driver who is alert and cautious can make a much safer car. This means staying alert, avoiding distractions, and not drinking and driving.

Preventive Service

Preventive Service is a program that helps car owners keep their cars in good condition. It includes regular check-ups, oil changes, and tire rotations. It also includes advice on how to drive safely and avoid accidents.

PS. Preventive Service

PS. Preventive Service is a program that helps car owners keep their cars in good condition. It includes regular check-ups, oil changes, and tire rotations. It also includes advice on how to drive safely and avoid accidents.

Preventive Service will save you trouble on the road

PS. campaign

More than 2 3/4 Million active families read Colliers, the National Weekly—and they own more than a Billion Dollars Worth of Motor Cars

SAFETY IN THE 1940 MANNER



"Solar Sealed" FOG LAMPS



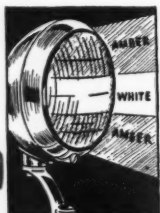
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No. 865

Write
for full
details

with DUAL-TONE LENS

For SAFER driving in adverse weather or dust . . . "SOLAR SEALED" UNIT consists of light source and metal reflector sealed in glass housing . . .

SEALED TYPE LIKE 93% OF
CAR MANUFACTURERS USE
ON 1940 EQUIPMENT



And as the special feature . . . the DUAL-TONE LENS. AN INTENSE BEAM OF WHITE LIGHT shoots through crystal middle segment for greater visibility while top and bottom segments AMBERIZE the moisture or dust molecules. Black tipped bulb remains lighted even if lens breaks. Battery or generator will not be overloaded on cars of any year model.

Members by invitation . . . Rice Leaders of the World Ass'n.

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CINCINNATI, OHIO

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MOTOR
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SAVES
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UNITS IN
ORDER TO
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TO BE REMOVED

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This Duro slide hammer will pay for itself many times over in saving time, and handling parts without destroying them. Heavily constructed for heavy duty work. A tremendous pressure can be exerted on parts to be removed. Simply hammer the sliding hammer against the head of tool to operate. The shaft and pulling finger are small enough to enter the closest places, yet heavy enough to give real service. After you use this tool, you'll wonder how you ever managed to get along without it. Finished in cadmium plate with red enameled hammer. Low priced. See them at your jobber or write for catalog.

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MOTOR AGE

DEVOTED TO THE INTERESTS OF THE INDEPENDENT
SERVICE STATION

*Subscriptions for Motor Age are accepted only from
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Vol. LIX, No. 7

June, 1940

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MOTOR AGE

JUNE

1940

Parachute Troops

Just as parachute troops have proved highly successful in modern warfare, direct mail advertising is found to be equally valuable in laying broadsides behind the lines of enemy competition. If competition is taking your customers away from you, break up their troop concentrations with a barrage of direct mail.

Call the Cop

The wrench set I recently purchased was far from complete, complains Gilbert Shuman, who keeps the cars running around Los Angeles. It had all the different size sockets and handles, but the manufacturer should have put in a burglar alarm to keep my friends from "lifting" the tools. Gil has another kick. It seems his February issue got lost (or did your tool lifting friends get it?) and wants it so as to keep his file of copies complete. Can't get along without it, concludes Gil. It's in the mail now, old man, so keep your shirt on.

We Bow

It's not often that I do any bragging in public, but the urge to say "I told you so" is so overwhelming that I just can't resist calling attention to the time specified for adjusting tappets in the latest Olds factory flat rate manual. The time is 1.7 hours for adjusting tappets on the eight, compared to 2.5 hours in the former edition. Now for the last few years, I have been receiving letters from the users of the Chilton Flat Rate Manual saying that our prices of \$3.00 was not high enough and that the factory specified 2.5 hours. It was also pointed out that the Olds factory manual stated that it was necessary to remove the front fender when doing the job. To all of which I re-

plied Nutz, and that it was not necessary to remove the fender and that the Chilton price of three bucks was ample. Well, the new Old manual says 1.7 hours is O.K. Multiply that by \$1.80 per hour and you get \$3.06, only six cents higher than the Chilton price. So the Olds factory has come to our way of thinking and I can take a bow.

Real Service

I had an interesting experience recently. I was in a shop talking to the boss. It was quitting time and the phone rang. "Can't do anything for you tonight," the boss

snarled into the phone, "the shop's closed for the day." The next evening I was in another shop when the same thing occurred. But this time, the boss after explaining politely that it was after hours, told the customers to drive around and he would see to it personally that the customer got service. What a difference! One shop used the time as an excuse to drive customers away from the shop, while the other used it as a means to build good will. It's not hard to guess which of the two shops will make the most money.

Bill Toboak



Shop Talk

WILBUR SHAW WINS AT

DRIVING the last 125 miles under the caution flag displayed because of rain on the eastern half of the track Wilbur Shaw drove to an easy victory in the Memorial Day classic, in a field of 20 cars which were still in the running but which were not allowed to improve their positions. His average for the 500 miles was 114.277 miles per hour.

Wilbur Shaw, driving the same Maserati car with which he won a hard-fought victory last year, led the field in the 28th running of the Indianapolis "500" to take first place with an average speed of 114.277 miles per hour. By so doing he became the second man ever to win this annual speed classic three times, sharing that honor with Louie Meyers, and became the first man ever to win the race two years in succession.

Due to the rain, the race was officially ended when Shaw received the checkered flag, and the other cars were flagged off the track and awarded finish positions in the order in which they were placed at the 150th lap when the caution flag was displayed and all drivers were forced to reduce speed and maintain their relative positions.

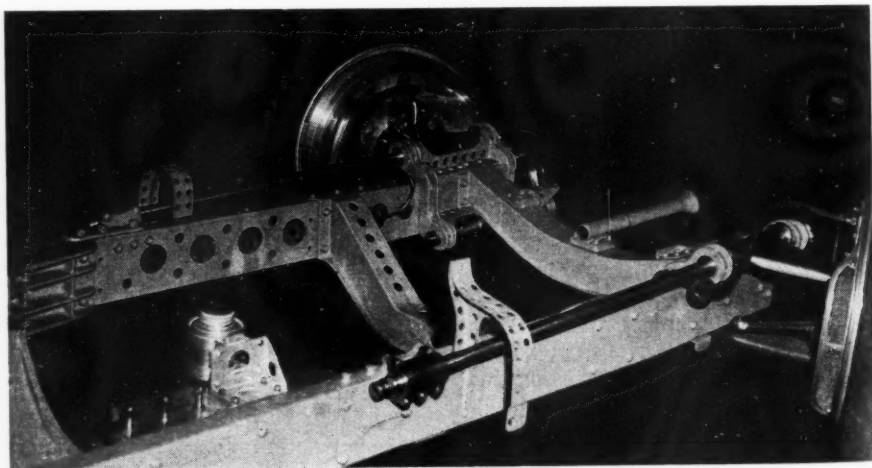
Although Shaw had nearly a lap lead on Rex Mays at the time the yellow flag was hung out, whether or not the order of finish would have been the same as the ultimate decision, is doubtful. Without detracting in any way from the credit due Shaw, because he had been driving a brilliant race up until the time the entire field went "touring," equal credit should be given to Mays, Horn, Rose, Thorne, Swanson and many others of the drivers still in the race. They were in there fighting every lap, and it seems safe to predict that the last hundred miles would have seen considerable shifting of positions before the checkered flag fell before each individual finishing in the first 10 places.

Unstinted praise is due the two Frenchmen, Rene LeBegue and

**Sets up his third victory as rain slows time to 114 m. p. h.
Rex Mays and Mauri Rose end in second and third places**

By BOB HANKINSON

See page 38 for specifications and performance data



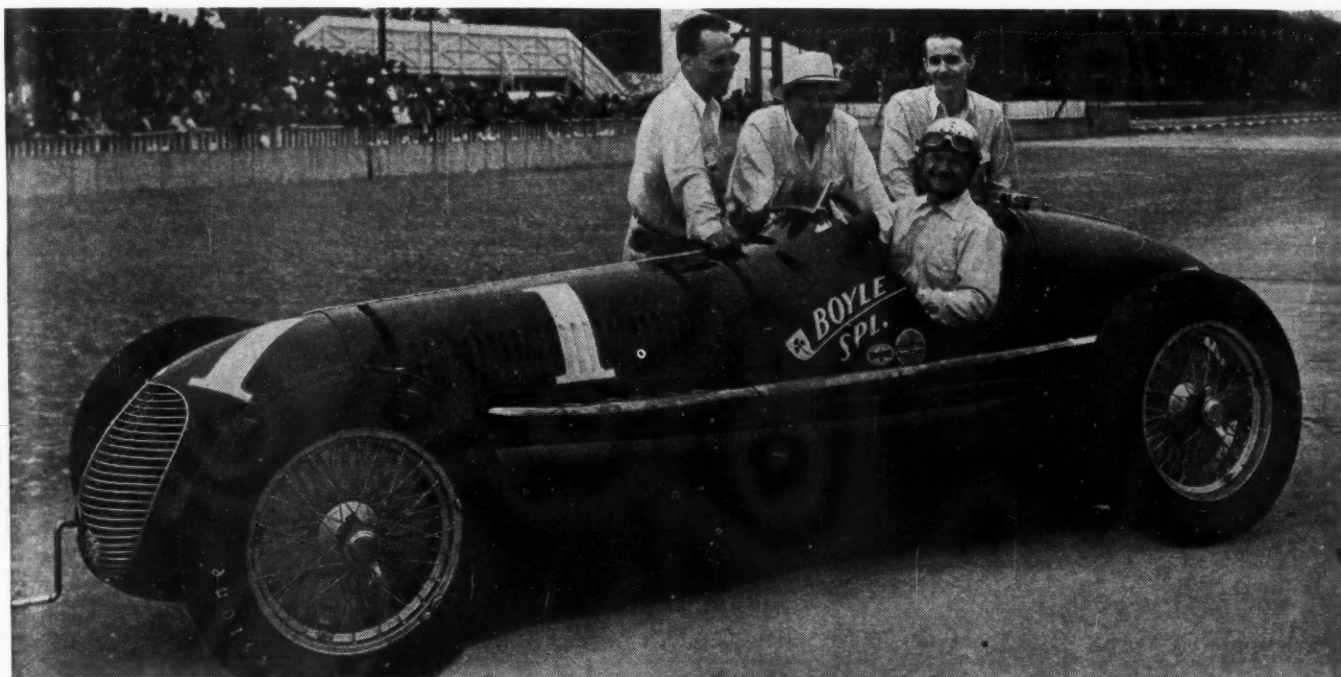
Rene Dreyfus, for their handling of the Maserati driven alternately by these two men during the race. With less than a week in which to learn the track and accustom themselves to driving in a direction opposite to that of the European races, they did a swell job, and finished with the car in tenth place.

Those spectators who attended the race for the thrills and spills

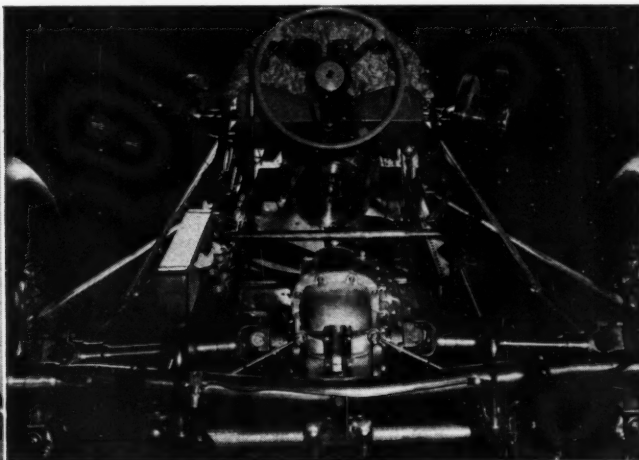
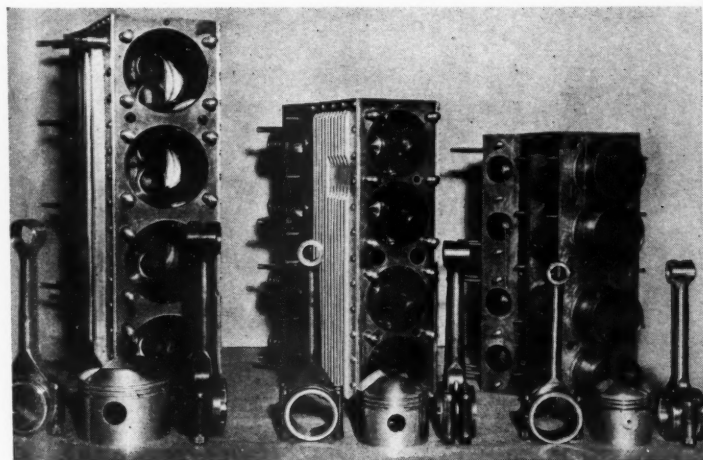
had their money's worth. The first crack-up occurred at the 60-mile mark when Paul Riganti, the South America Champion, went into a skid on the southeast turn, crashed through the inner wall and rolled completely over twice before the car came to rest right side up in the midfield. Riganti was thrown clear, and suffered only minor injuries.

Tommy Hinnershitz, driving his

INDIANAPOLIS



Wilbur Shaw and his winning Maserati



(Opposite page) Front suspension mounting and torsion bar arrangement on Maserati 8CTF.

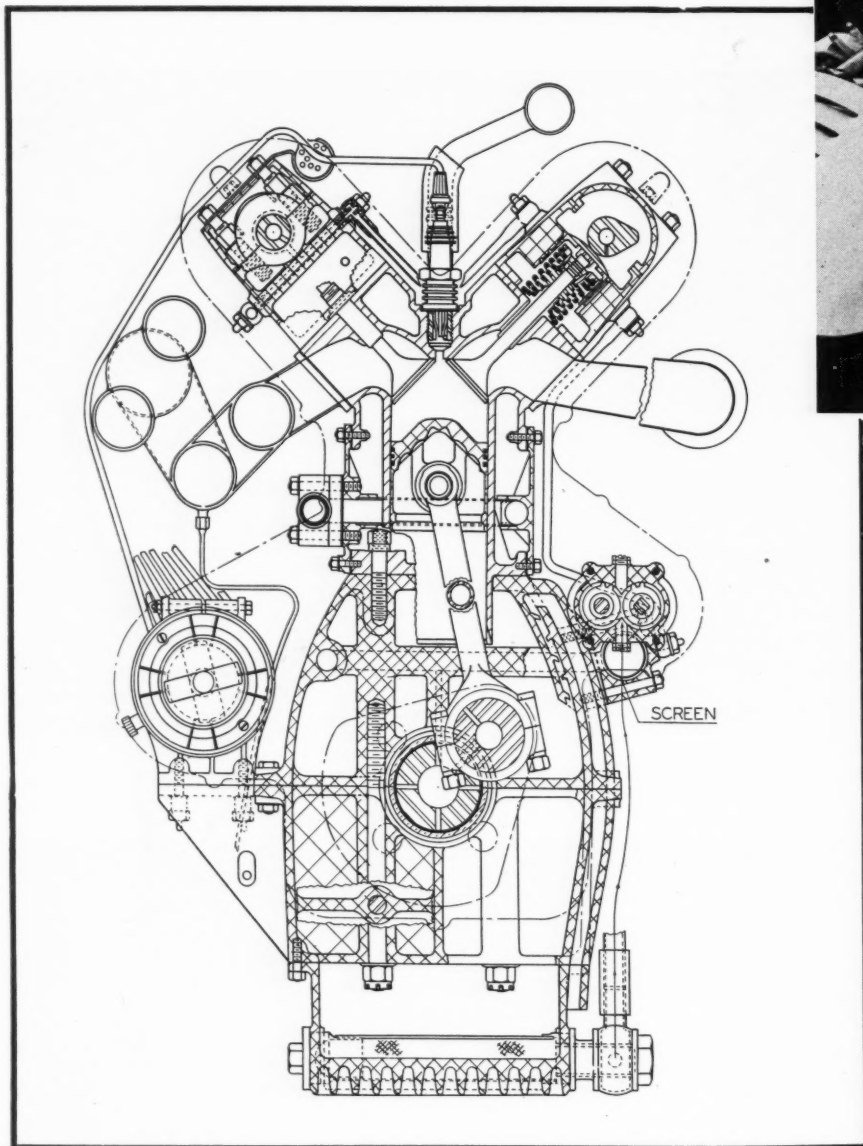
first race on the Indianapolis track, furnished the thrills for the reserved seat patrons when his crankshaft broke just after he crossed the finish line on his 32nd lap. His car hit the wall broadside, bounced away and smacked the wall again. With skillful handling, Hinnerhitz managed to keep the car under control and brought it to rest on the

(Continued on page 16)

(Above left) Comparative Anatomy: Left, parts of four cylinder 255 cu. in. Offenhauser engine; center, one block, rods and piston of 268 in. eight cylinder Miller engine used in Ted Horn's car; right, corresponding group of Maserati parts from Wilbur Shaw's engine.

(Above right) View showing structural details of the DeDion Bouton type rear suspension of the Sampson Special 16 cylinder entry. Springing is by torsion bars, one of which is visible above.

(Below) End elevation 8CTF Maserati. The 8CL 3000 type, as found in the Raul Riganti entry, is basically similar in structure, but has four valves per cylinder, bore and stroke of 78 mm. each, and valves are operated through rockers and finger followers instead of cups, as shown here for the 8CTF. Both types employ two Rootes compressors, of apparently identical size and construction, with one Memini carburetor for each compressor.

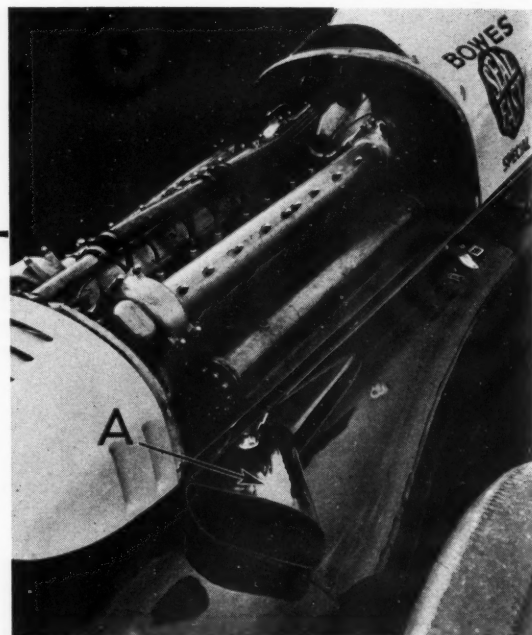


(Continued from preceding page) apron of the southwest turn. He escaped with only a bruised and sprained right arm.

A few minutes afterward, Ralph Hepburn was coming down the home stretch when his steering gear tightened up and spun his car completely around twice, stopping on the inside of the track without hitting the rail. Hepburn was not injured at all.

At 296 miles Duke Nalon was coming down the home stretch when a connecting rod let go and poked a hole through the case.

Of the car equipment used, Champion had little competition in the spark plug set-up since all of the cars except those driven by Rex Mays and Ralph Hepburn used Champion plugs. The cars mentioned used Bowes Plugs. Bosch Magnetos were used on all except the Maserati cars driven by Shaw and LeBegue, and the Alfa Romeo driven by Al Miller. Perfect Circle piston rings were used on 19 cars, Burd rings on 12, American Hammered rings on the Sampson Special and Maserati rings on the South American entry. Packard cable



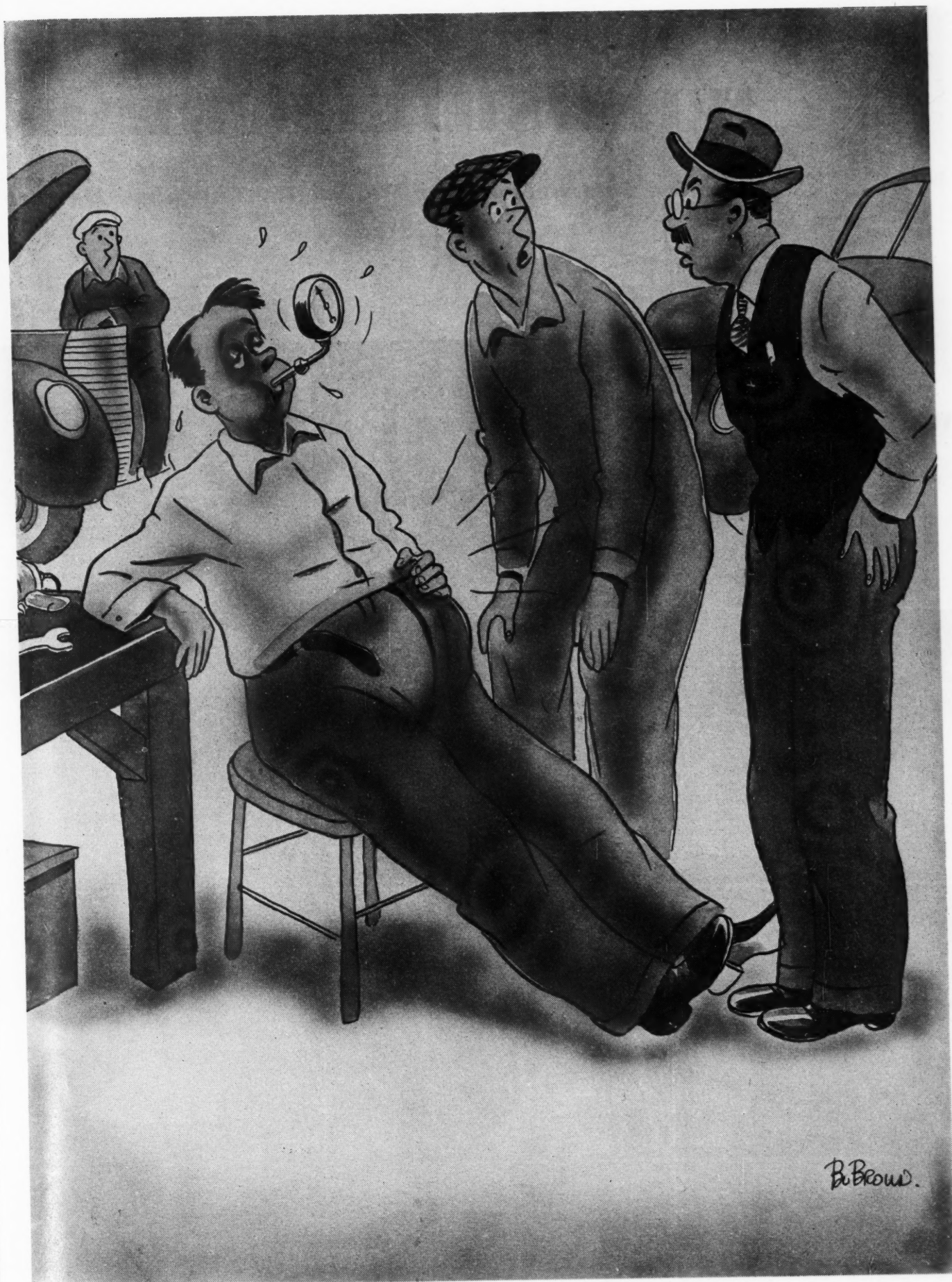
(Above) Intake side of the Bowes Seal Fast Special driven by Rex Mays. The scoop (A) forces air over the inter-cooler manifold.

was the unanimous choice of all the drivers, while New Departure bearings and Double Diamond rear axle gears are more or less standard equipment for this type of service.

The subject of gasoline is always one of interest, and this year more of the drivers selected an alcohol blend than heretofore. The alcohol blend fuel used consisted mainly of a mixture of approximately 80 per cent methynol, 17 per cent benzol, and 3 per cent acetone. The gasoline blends were approximately 80 per cent gasoline, 20 per cent benzol, with lead added to bring the octane number somewhere in the vicinity of 108. Compression ratios were approximately 12 or 14 to 1.

Facing the starter's flag were 33 cars, 19 of them powered by 4-cylinder engines, four by 6 cylinder engines, nine by 8-cylinder engines and one with a 16-cylinder power plant. Seven of the 8-cylinder cars were of foreign manufacture—four Maserati make and three Alfa-Romeo models. The American-manufactured 8's consisted of one Miller engine driven by Ted Horn, and one Bowes engine driven by Rex Mays. All of the other cars in the race were powered by American made engines.

Superchargers were more in evidence this year than ever before, 11
(Continued on page 60)

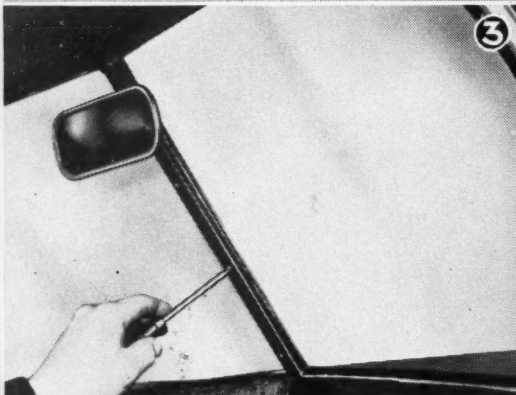
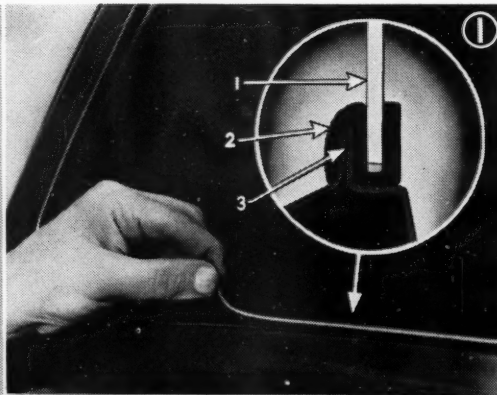


"Ed's had a compression reading of 50 since he ate those hot dogs for lunch!"

WINDSHIELD GLASS

Detailed instructions for Plymouth, Chrysler, De Soto

WINDSHIELD GLASS REMOVAL



WINDSHIELD GLASS INSTALLATION



SERVICE

and Dodge automobiles

REMOVAL

1. Construction details of windshield. 1, windshield glass. 2, rubber seal. 3, body edge around windshield.

2. Install masking tape on top of instrument panel so that panel will not be scratched.

3. Remove garnish molding and screws holding windshield center strip molding in place. Lift off the clips at the bottom and top of windshield in the front.

4. Pull away metal molding from the rubber molding.

5. Loosen rubber molding from around the body fence and glass on both inside and outside of windshield. Work the rubber molding off the upper outside corner of the fence with a hard wooden wedge.

6. Push the glass in at the upper outside corner, rolling the rubber lip molding off the fence.

7. Starting at the upper outside corner, roll the rubber molding off the glass, working across the top and down the outside, to the bottom of the glass and pulling the glass toward the inside of the car.

8. With a wooden wedge, free the glass from the center strip and bottom of rubber molding and pull the glass from the center bar. At the same time, free the upper inside corner, permitting complete removal of the glass.

INSTALLATION

9. After rounding the edges of the glass with a stone and coating them with soft soap, insert the glass in the bottom of the rubber molding and slide it to within 4 in. of the center bar. Hook the rubber molding over the glass at the top outside corner and slide glass toward center strip. Also keeping the rubber molding on the bottom of the glass.

10. Continue working the rubber molding over the top of the glass and at the same time slide the glass toward the center bar.

11. Work the rubber molding over the glass at the upper outside corner by means of a wooden wedge.

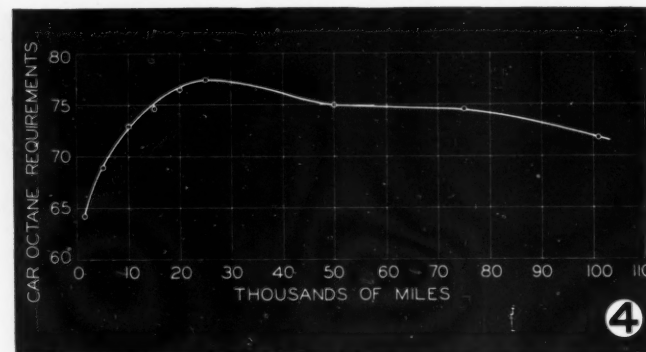
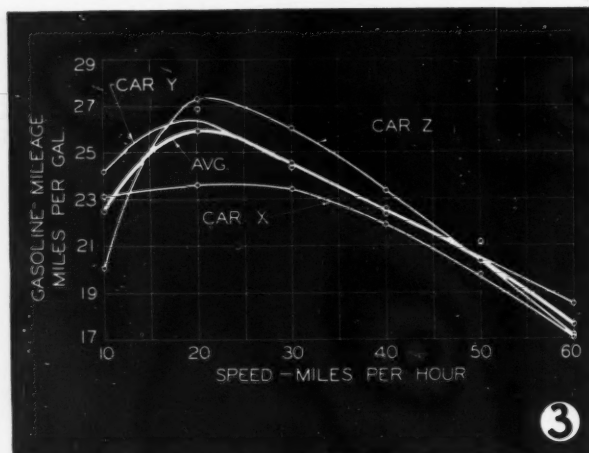
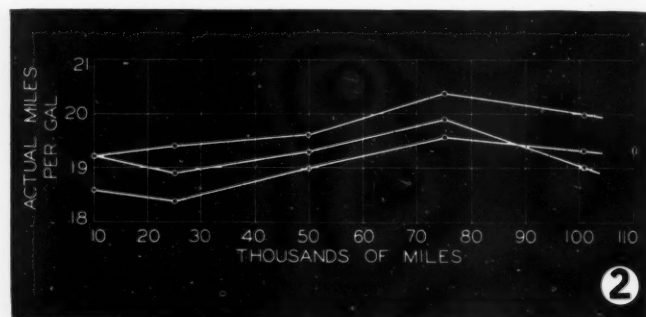
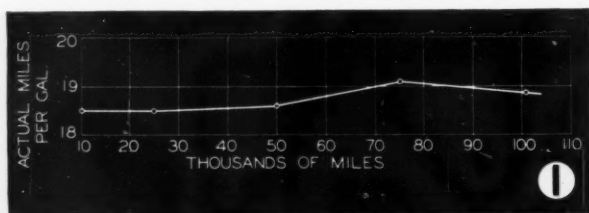
12. Work the glass into the groove of the rubber molding of the center strip. Then with the glass held close to the windshield opening, work the lip of the molding up and over the fence.

13. Seal the rubber channel and glass with sealing compound, making sure that the compound goes along the edge of the glass. Also work a thin coating of sealing compound between the outside of the fence and the rubber molding. Install the metal molding and clips on the front side of the windshield using liquid soap around the molding. Install garnish molding. While one mechanic holds outside center strip in place, another mechanic installs the vertical strip on the inside.



By BILL TOBOLDT





ROAD TESTING THE BIG

MOST of our readers no doubt are familiar, from newspaper accounts and advertisements, with the fact that the Atlantic Refining Company is conducting a severe and extensive road test of 1940 American passenger cars in Florida. It is in a way a repetition of a similar test held over a circuit at Toms River, N. J., five years ago, but the average speed was increased from 40 to 50 m.p.h. It was figured that this higher speed would make fuel and oil requirements more difficult. Because warm-weather conditions could not be obtained in the North during the winter, the test was run over an 85-mile course starting near Palm Beach, Fla., and running along the eastern shore of Lake Okeechobee to a point nine miles north of the town of Okeechobee. Twelve cars were used in the test, four Chevrolet, Ford and Plymouth each. The test began on Jan. 8 and by April

19 each car had been driven more than 100,000 miles, at the rate of approximately 1000 miles per day.

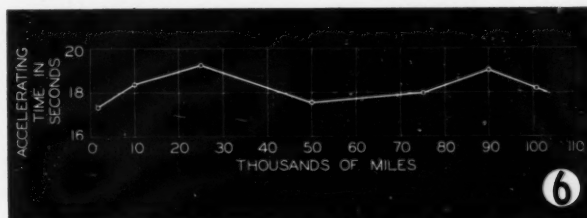
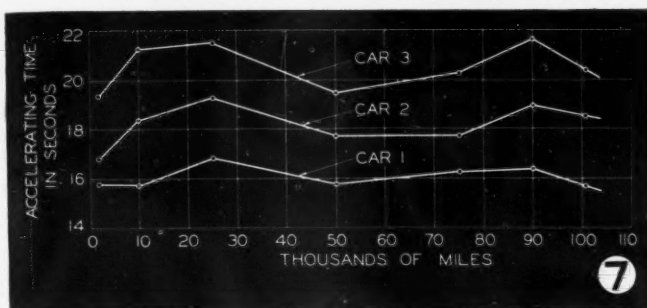
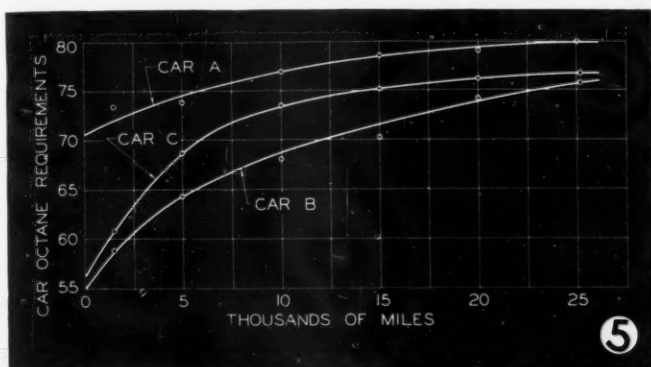
Some results with respect to fuel consumption by these cars were given in a talk by Dr. Thomas G. Delbridge, manager of Atlantic Refining Company's research and development department, at the Franklin Institute, Philadelphia, recently. In the tests, one car of each make is being used to make comparisons of the road performance with various brands of gasoline, while the other nine are being operated on the same gasoline and the same lubricant throughout the test. The results bearing on fuel performance are given in the graphs printed herewith.

Fig. 1 shows gasoline mileage as the nine-car average, obtained when driving at the selected speed—50 m.p.h. average, 55 m.p.h. maximum. It will be noted that the fuel mileage increases with service life

up to 75,000 miles, and is greater at 100,000 miles than at the beginning.

Fig. 2 shows individual gasoline-mileage records for three cars of the same make. It indicates that cars made by the same manufacturer, to the same specifications and at the same time, will differ in fuel consumption by as much as 5 per cent, if not more. Here again the fuel mileage grows with service life.

Fig. 3 shows the effect of driving speed on gasoline mileage. The three light-line curves show the average for the three cars of each make, while the heavy line curve shows the average for all nine. It will be seen that the gasoline mileage increases with the driving speed up to about 20 m.p.h. and then falls off. At 50 m.p.h. the average consumption is about 20 per cent more than at 20 m.p.h., as the curves also show.



1. Average gasoline mileage of nine cars
2. Gasoline mileage of individual cars of the same make
3. Effect of driving speed on gasoline mileage
4. Car octane requirements. Nine car averages
5. Car octane requirements by make. Three car averages
6. Acceleration from 10 to 50 m.p.h. Nine car averages
7. Acceleration from 10 to 50 m.p.h. Three car averages

THREE

Fig. 4 shows the octane requirements as revealed by the Florida road test. While the average new car required 64 octane fuel, after 10,000 miles the octane requirement had increased to 73, and after 50,000 miles it had leveled off to about 75. No carbon was removed throughout the Florida test, but from results obtained in other experimental work it is concluded that carbon removal after 50,000 miles would have reduced the octane requirement from 75 to about 70.

Fig. 5 shows the average octane-requirement changes separately for the three makes of cars tested. These curves are carried only to 25,000 miles, which is the distance in which major changes in octane requirements occur. It will be noted that octane requirements of the three makes of car differ considerably.

Fig. 6 shows time in seconds to

accelerate from 10 m.p.h. to 50 m.p.h., plotted against cumulative car mileage, as the average for the nine cars. This indicates that under such operating conditions as in the test, these 1940 cars can maintain their new-car acceleration for at least 100,000 miles. The improvement of about 8 per cent at 50,000 miles over the 25,000-mile figure is due to the fact that at about 40,000 miles valves were ground on a number of the cars, a practice recommended by the car manufacturer.

Fig. 7 presents separate accelera-

tion curves for each of the three makes. From these it can be seen that there are considerable differences between the different makes, and that in any one make of car there is only a slight change in acceleration in 100,000 miles. Changes in atmospheric conditions seem to have been partly responsible for this slight change during the test.

A second phase of the power tests consisted of a series of maximum-speed tests. A new Chevrolet, a new Ford, and a new Plymouth, after being carefully broken

(Continued on page 78)



SCHOOL DAYS FOR SERVICE MEN

THE service man doing the best job today is the one who knows not only how to do a thing but why it has to be done just that way. This is back of the thinking at the Auto-Lite Service School, conducted by the Electric Auto-Lite Co., Toledo, Ohio.

The school is conducted by H. B. Hewitt, Auto-Lite's director of education, and Mr. Hewitt will tell you that when a student finishes the course he not only knows what to do—in unusual cases as well as the commonplace—but he knows why. Plenty of men know that according to a manual the generator output on a car must be set at 22 amps., for example, and another at 30 amps. "But how many such men," asked Mr. Hewitt, "know why a particular charging rate is right for one generator but altogether wrong for another?"

The purpose of the training course in the Auto-Lite Service School is to enable service men to know the whys and wherefores concerning electrical units and their testing, adjusting, etc. The course has to do with sound, fundamental reasons behind service procedures

Electrical work on today's cars calls for knowledge—and here's one way to learn

By B. M. IKERT

—instead of making adjustments or repairs simply because a printed sheet of instructions tells a man to do so.

The students completing the course understand the basic laws which govern the workings of a generator, starting motor, relays, the ignition system, lighting system and automotive electric systems regardless of make or model. When these students return home they are, therefore, in a far better position than ever to do profitable and good automotive electrical service work.

At the Auto-Lite School is a model automotive service station with shop facilities for handling five cars at the same time. Facilities are at hand for making complete engine performance analysis as well as individual tests of engine and electrical units. The model service station provides the necessary shop work for the course. Students are required to locate and remedy the troubles of the cars brought in—using instruments and equipment for the purpose. Each man makes his own tests and puts

(Continued on page 76)



H. B. Mathews,
Vice-president, Commercial Credit Co.

REPAIRS ON TIME

***A new help in increasing repair work
on a credit basis that means cash im-
mediately for all work done on "time"***

A LOW-RATE, nation-wide financing plan for automobile reconditioning has been announced by H. B. Mathews, vice-president and director of Commercial Credit Co., Baltimore, available to the public through independent repair shops and car dealer service stations which have been approved by Commercial Credit upon the recommendation of automotive jobbers.

Commercial Credit, through its more than 200 offices throughout the U. S., and in cooperation with after-market manufacturers and jobbers have developed a plan whereby a greater volume of all types of repair work can be developed for repair shops and garages on a pay-as-you-drive basis. The plan is called Commercial Credit Plan for Automobile Reconditioning.

The operation of the plan is simple, Mr. Mathews points out.

Financing of repairs is limited to cars not more than five years of age, and accessories and tires may be included. The minimum down payment is \$10.00. On amounts above \$100 the down payment is 10 per cent of the total cost, with a maximum unpaid balance limited at \$200. Unpaid balances can be financed over periods of six, eight, ten or twelve months. Printed

rate cards are supplied to the repairmen.

Application for credit on the part of the car owner is similar to the usual statement required by a finance company. However, in addition to information regarding permanency of residence, regularity of income, applicant will be required to state whether he owns the car outright or whether there is an unpaid balance due on the title or ownership papers. In the latter case, this will obviously have some bearing upon the further extension of credit, but does not necessarily bar the owner from financing necessary repair on the Commercial Credit Plan, Mr. Mathews says.

Appointment of retail outlets who will be able to offer the plan to their customers will be based upon recommendation of the automotive jobber and the signing of agreements between jobber and Commercial Credit.

Approval of a credit application made at any one of the Commercial Credit branches is a matter of a few hours. When the credit is approved, the repairman proceeds with the work. Upon completion of the work, Commercial Credit pays the full amount of the financed contract to the jobber, who in turn deducts any amount due by the repairman and remits immediately the balance to the serviceman. In this way the parts account with the jobber is paid, the repairman gets his labor and parts profit, and the owner gets a more complete repair job financed on easy terms.

The repairman will sign the

financed paper with recourse, meaning that he will be held liable for the amount of the contract in the event that the purchaser fails to complete payments. Jobbers likewise will be responsible for the fulfillment of the contract, agreeing with Commercial Credit, to stand losses up to 5 per cent of the face value of all paper purchased during a Contract Year, but not in excess of \$1,000.

The Commercial Credit plan offers possibilities of increasing shop volume especially in major repairs and in the sale of so-called "related services." For example, engine overhauling might easily come under such a financing plan and in cases where the owner simply considers the repair of only one mechanical unit, the repairman can sell the repair or replacement of related units for a more thorough reconditioning job.

Dollars earned per shop job should increase where repairmen use the financing facilities to "sell" the need for other repairs and replacements. For example, if the total bill on a given repair job is, let's say, \$24.00—it is a matter of selling on the part of the service man to point out other actual reconditioning needs—new brake linings, tires, battery, ring job, body and fender repairs—thus increase the total amount of the sale to the higher profit bracket. Incidentally, major accessories are included along with replacement parts in the financing plan.

Advertising and sales promotion is planned to stimulate interest in

(Continued on page 79)

Service Hints

from

THE FACTORIES

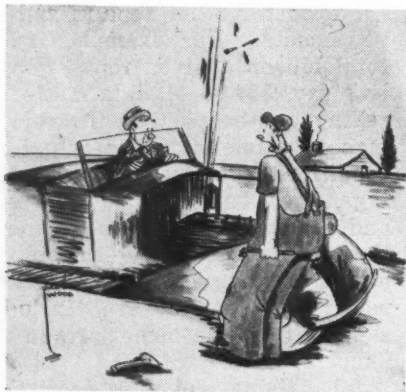
Oil Leak at Fan Drive Pulley

Should oil leakage be encountered at the fan drive pulley on the 1939 and 1940 model Studebaker Champion cars, a correction can be made by installing the following parts. Do not make any of these changes unless there is an unusual loss of oil. Some oil moisture is to be expected at this point.

A star type lock washer, Part No. 84 x 8, is used on all Model 2G engines in place of a split type lock washer, Part No. 40 x 435. This washer is used under the head of the fan pulley retaining screw at the front of the crankshaft.

A heavier plain washer is used at the front of the fan drive pulley. The new washer, part No. 198959, is 7/32-in. thick and 1-11/16-in. in diameter. With the use of this heavier washer no cupping will take place when the fan pulley retaining screw is tightened, thus providing a firmer seat of the washer against the fan pulley, and preventing possibility of oil leakage.

As an additional precaution a copper asbestos gasket, Part No. 199108, is now used in production between the plain washer and the fan pulley. The time required to check crankshaft end play, install the new washers and the gasket should not exceed 20 minutes.



"Just what I thought—they was all hittin' on that one!"

Only the latest type lock washer and plain washer will be carried in factory service parts stocks on Champion G and 2G cars.

The installation of these washers and gaskets may prove to be an adequate remedy without the need of performing the other operations mentioned in this article.

Poor Gear Selection

Complaints on stiffness in the gear shift mechanism on 1940 Pontiac cars where it is difficult to move the shift lever toward the rim of the steering wheel may be caused by the vertical selector lever shaft binding in the transmission case. To check for this condition, disconnect the selector rod from the selector shaft lever on the side of the transmission case so that bind in the selector lever shaft can be detected.

If the selector lever shaft is binding, it is best to remove the transmission assembly. Clean the outside of the case, remove the cover and remove the rear bearing retainer and main shaft assembly. Remove the first and reverse shifter fork lock screw and the selector shaft lock screws. Drive the selector shaft to the right, knocking out the welch plug and remove the shaft from the case. Move the first and reverse shifter shaft to the rear far enough to permit removal of the selector lever shaft. The selector lever shaft should be cleaned with fine sandpaper and the hole in the case should be cleaned with a wire brush, removing all traces of rust and corrosion. Coat the shaft with lubricant and place a small amount of lubricant in the hole inside the case so that the hole is coated with lubricant as the shaft is reassembled. This work can be done in 2.5 hours.

Carburetor Changes

Carburetor E6S2 has been released to supersede E6S1 on Chrysler 6-1940. E6S1 carburetors can be



Valve stems used in Pontiac motors must stand up against the bite of a diamond drill under pressure and here is the superficial hardness test in operation. Until recently this test was performed on a hand-operated machine at the rate of 200 stems an hour. This new electric tester attempts to drive a precision ground, cone-shaped diamond into 600 stems an hour. A tolerance of 70 kilograms of pressure is allowed—no more than a tiny scratch on the valve stem end. If the diamond digs deeper the stem is thrown out.

brought to E6S2 specifications by installing 123-39S idle orifice tube and plug assembly, 30c., and 159-89S main metering jet assembly, 30c. Both parts should be installed at one time.

Carburetors stamped E6S1 on bowl cover were equipped with these two parts at the factory. Do not use 123-39S in E6S2 carburetors, but use 123-31S.

159-87S main metering jet assembly has been superseded by 159-89S. 159-63S has been superseded by 159-87S. 159-59S main metering jet assembly becomes two sizes lean.

New Air Horn

Catalog page shows 6-334S air horn and climatic control assembly and 170K64S coil and housing assembly with coil to be set one point rich on Nash-Lafayette—1940.

These have now been superseded by 6-357S air horn and climatic control assembly using a 170B64S, with coil to be set on index.



MOTOR AGE SHOP OF THE MONTH

This month our spotlight shines on Kansas City. Mr. J. C. Heilman, owner of Heilman's Automotive Service in that metropolis, has his shop located in a residential section of town. Finding storage business, which was practically his specialty, on the wane J. C. decided to do something about it and now has fewer financial headaches. Three years ago he completely renovated his shop. He and his employees planned and executed the job at slack times without losing any time from regular work. Mr. Heilman employs five mechanics and has an average of 600 shop orders per month with a gross of \$4,000. He recently installed the first dynamometer in the city and his shop has become an outstanding service depot in that vicinity. Renovation has greatly enhanced the interior appearance of the shop—note how square, ugly columns at the side of the wall have been covered by rounded, fluted metal sheets. Note also the modern indirect lighting fixtures. To add to the clean appearance all air and electrical lines and connections have been concealed.

THE READERS' CLEARING HOUSE

Service Men's Queries

REGULATOR TROUBLE

I'm having trouble with a vibrating voltage regulator used on a 1934 Dodge. The ammeter hand vibrates excessively. Am using an A.V.R. set for adjusting, set to hold 7.5 volts at about 150 degrees. Watching the meters the voltage comes up to 7.5 then suddenly drops to 6.8 with a proportionate drop in amperage, in about 10 seconds it works up to 7.5 and the same thing repeats. This cycle happens at different frequencies. The

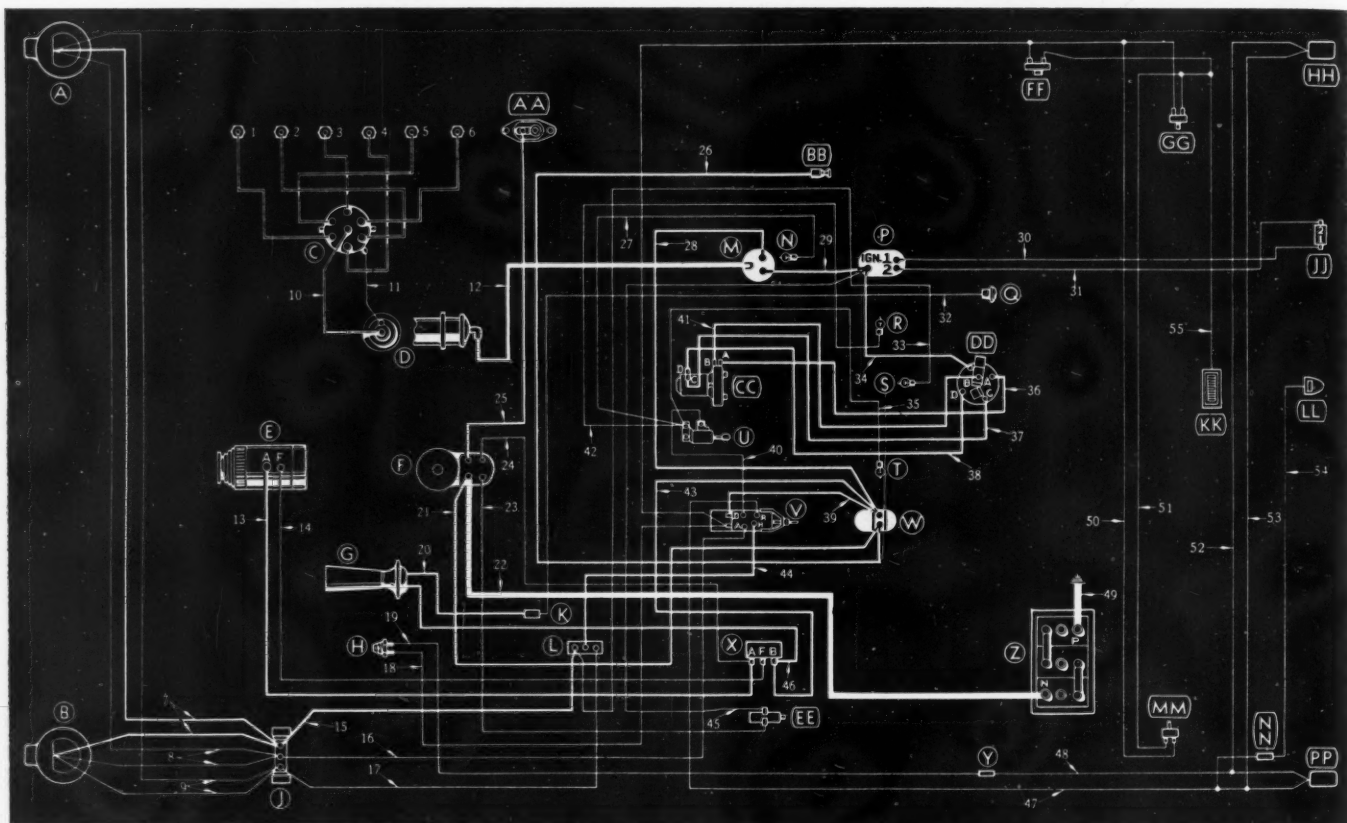
regulator is new. It seems that the points do not vibrate smoothly, although all adjustments are according to the makers. With the field grounded the generator works perfectly. Vibrator is mounted horizontally on the motor side of the dash. Do you think the resistance of wrong value could be the cause? The amperage will either be 2 amps. or 15 amps. It will not stay in between. Please help.

I also have for repair a 1935 Chevrolet and a 1934 Dodge with a chattering or rough clutch in reverse only.

Both clutch plates have been replaced. I cannot figure out why the trouble in reverse. Can you help on this?

Anthony F. Krupinski, Star Route, Webster, Mass.

FIRST thing I would do in an endeavor to overcome the trouble you are having with the vibrating voltage regulator would be to check the air gap between the core and the armature. Too great a gap will cause the trouble you describe. However, I think
(Continued on next page)



1940 Chrysler C-25 Wiring Diagram

- A. Headlight—right
- B. Headlight—left
- C. Ignition distributor
- D. Ignition coil
- E. Generator
- F. Starter motor and solenoid
- G. Horn
- H. Signal lamp switch
- J. Headlight cables terminal block
- K. Cable connector
- L. Headlight dimmer foot switch
- M. Ignition switch and lock
- N. Ignition switch light
- P. Fuel gage (panel unit)
- Q. Horn button
- R. Instrument light—right
- S. Headlight bright beam indicator light
- T. Instrument light—left
- U. Instrument light switch
- V. Head and tail light switch and circuit breaker
- W. Ammeter
- X. Voltage regulator
- Y. Cable connector
- Z. Battery

- AA. Automatic choke unit
- BB. Cigar lighter (convertible coupes)
- CC. Windshield wiper motor
- DD. Windshield wiper switch and circuit breaker
- EE. Starter switch
- FF. Reading light pillar switch
- GG. Reading light automatic door switch right (7-pass. sedan & limousine)
- HH. Tail and signal light—right
- JJ. Fuel gage (tank unit)
- KK. Reading light
- LL. Rear license plate light
- MM. Reading light automatic door switch left (7-pass. sedan & limousine)
- NN. Cable connector

- PP. Tail and signal light—left
- 1-6. Spark plug cables (high tension cable)
- 7. Red
- 8. Yellow
- 9. Black
- 10. Secondary cable (high tension cable)
- 11. Primary cable (black)
- 12. Ignition switch cable
- 13. Red
- 14. Green
- 15. Red
- 16. Yellow
- 17. Black
- 18. Red
- 19. Red
- 20. Green
- 21. Red
- 22. Starter cable and terminal (—) negative
- 23. Brown
- 24. Black and yellow
- 25. White
- 26. Green

- 27. Black
- 28. Brown
- 29. Blue
- 30. Blue
- 31. Black and yellow
- 32. Black
- 33. Brown
- 34. Red
- 35. Black
- 36. Green
- 37. Black
- 38. Brown
- 39. Brown
- 40. Black
- 41. Red
- 42. Black
- 43. Black
- 44. Yellow
- 45. Brown
- 46. Green
- 47. White
- 48. Red
- 49. Battery ground cable and terminal (+) positive
- 50. Red
- 51. Yellow
- 52. Red
- 53. White
- 54. White
- 55. Yellow

(Continued from preceding page)
it would pay to make a complete check of the generator and also the charging circuit.

Now in regard to the clutch trouble you are experiencing on the 1935 Chevrolet and the 1934 Dodge, I'd suggest that you check the engine rear mounting bolts.

In general, if the clutch is defective it will show up in both forward and reverse speeds. Inasmuch as your trouble appears only in reverse, I think you will find the cause of the trouble outside of the clutch.

In addition to the engine and transmission mounting bolts, you might check the spring U-bolts and universal

joints. Sometimes a worn reverse idler gear or reverse idler gear shaft will cause the difficulty.

SLIPS OUT OF GEAR

We have been having trouble with a 1932 Plymouth slipping out of high gear, when coasting or going down hill.

We have cut deeper notches in the shifting fork, installed a new high gear, main drive gear and second gear. The bearings, cluster, shaft and cluster gears seem to be O.K. for wear and clearance, shifts easy in all gears and doesn't bind in shifting.

This car apparently has been this way for some time, because it has been driven in free wheeling mostly. Could it be that I have more trouble in the transmission or could it be somewhere else?

Any help you can give us will be appreciated. We have been readers of the MOTOR AGE for several years and like it very much. Glen Mills, Mills Battery and Electric Service, Wapello, Iowa.

THIS is usually due to misalignment condition between the transmission case and the flywheel housing. It can be sometimes corrected by installing an additional gasket between

the casing and the flywheel housing.

The procedure is to get a new gasket and tear it in half horizontally, and install only the lower half. This has the effect of raising the rear end of the transmission slightly, which is usually enough to overcome the misalignment. In some cases installation of the upper half of the gasket corrects the trouble, but in the majority of cases the correction is brought about by installing only the lower half.

It is possible of course that this trouble may be caused by a worn high sliding gear or wear in the transmission main shaft pilot bearing. I believe, however, that I would try the installation of the lower half gasket between the casing and the clutch housing first, because this is much easier and quite often does the trick.

POOR MILEAGE

I am a subscriber to MOTOR AGE and enjoy reading it very much.

I have a customer driving a '39 Chevrolet who is getting only 14 to 14½ miles to a gallon of gas. Whether this is on a trip or just around town doesn't seem to make any difference. Can anything be done to increase this mileage? E. L. Glover, Glover Garage, Russellville, Missouri.

IF you have carefully truned the engine of the 1939 Chevrolet, and you are still getting poor mileage, I would suggest that your trouble is probably caused by the metering rod hole cover stop, Chevrolet part No. 839099.

Installation of this part should materially improve the gasoline mileage of the car.

STARTER HOUSING BREAKS

I have a 1937 Master Chevrolet truck which has broken three starter Bendix housings in less than a year. I have checked armature shaft for true each time, also for end play and clearance, and set spark with timing light.

Can you tell me what the trouble is?

F. H. Ames,
Lafayette Garage,
Lafayette, Oregon.

IT would seem to me the most probable cause of your trouble is misalignment between the starter and the flywheel ring gear. About the easiest way to check this is to put a little Prussian blue on the pinion and start the engine. Then stop the engine and examine the ring gear and the pinion gear teeth to see that they are contacting correctly. If not, you can place shims between the starter housing and the flywheel housing in order to correct the trouble. Just where these shims will go, you can determine from the contact of the gear teeth.

There's also a possibility that the

flywheel ring gear is not true, and this can be determined by the Prussian blue test previously mentioned, or by means of a dial gage.

GEAR SHIFTER

Please send information on Studebaker Champion remote control shift. Irvin Weidle, Weidle's Auto Service, 44 N. 1st St., Miamisburg, Ohio.

THE first point to check is to be sure that there is from 1/16-in. to 1/8-in. clearance between the instrument panel and the gear shift rods running along side of the steering column. This clearance can be obtained by loosening the clamp bracket and shifting the steering post jacket enough to provide it.

The other point covers the location of the shifting levers when the transmission is in neutral. The procedure for this is to first disconnect the shifter rods from the levers at the transmission. Pry out the inspection hole plug in the shifting lever box at the bottom of the steering column and place the remove control lever in a neutral position. This neutral position can be located accurately by an inspection through the inspection hole in the steering box. Next manually shift the gears in the transmission until they also are in neutral. Adjust

the length of the shifter rods by means of the clevis until the clevis pin will enter freely through the clevis and the shifting levers at the transmission.

With the shift control mechanism properly located in neutral, the shift into low and reverse and second and high, will automatically be correct.

He Gets a Dollar!

R. J. Bradbury of Frackville, Pa., gets one dollar and the original drawing of the cartoon which appears on this page. You're invited to send in suggestions for this monthly "Remember This One?" Just send us the basic idea—we'll polish it up, if necessary—and if we use it you'll receive one dollar and the original drawing of the cartoon which is based on your suggestion.

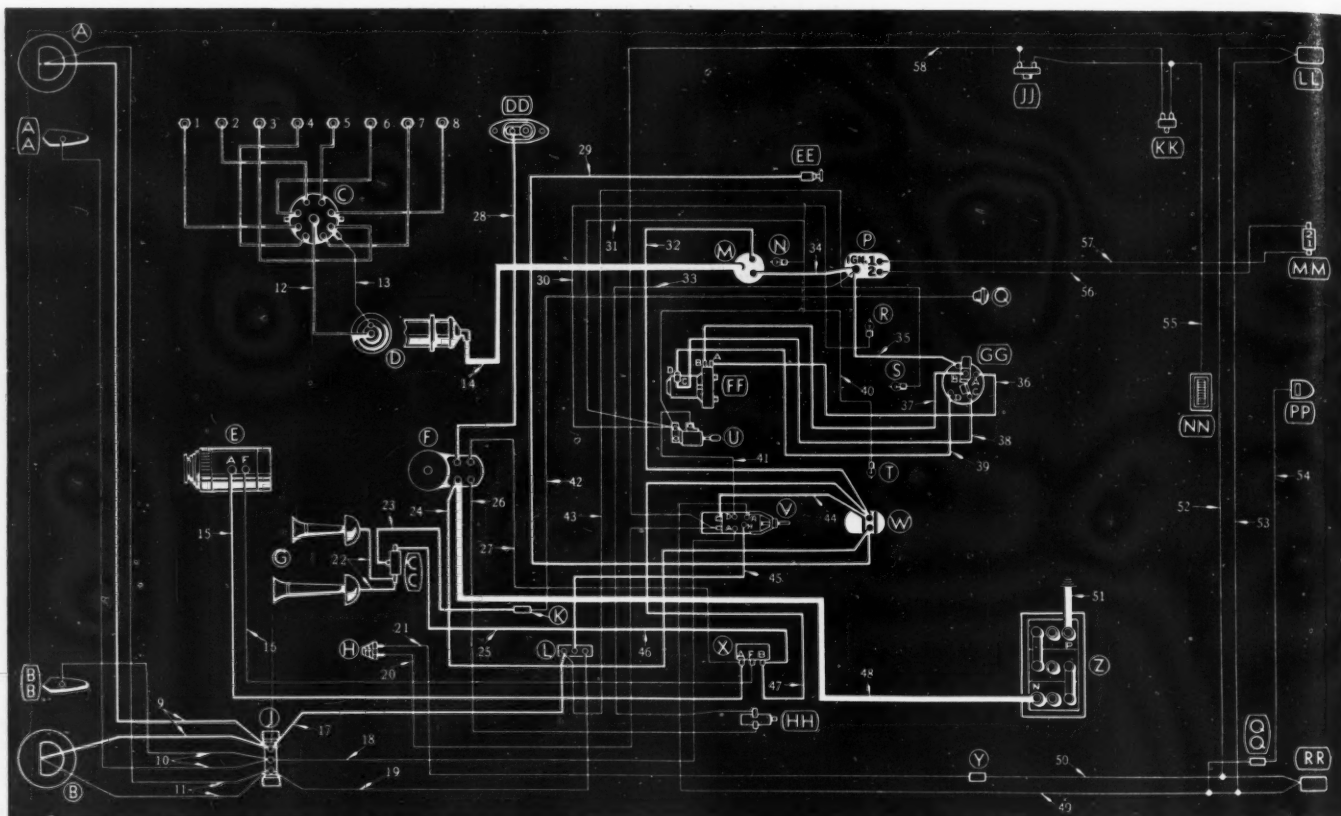
Every shop has pet gripes and daily incidents which keep the repair business from ever getting boring. Maybe clipping these cartoons from Motor Age and posting them in your waiting room (as Curley's Garage in Carthage, Cincinnati, Ohio, tells us they're doing) will give your customers a chance to "see themselves"—and possibly ease up on you.

We can't promise to enter into correspondence over your suggestions or to return those we are unable to use. If you see your idea and name published, you'll know the dollar and the original drawing will soon be on their way to you.

REMEMBER THIS ONE?



THE "EVER SINCE" BOY —: HE CAN TELL YOU HOW A VALVE JOB ON HIS ROADSTER CAUSED A FLAT TIRE ON HIS UNCLE'S SEDAN!



1940 Chrysler C-26 Wiring Diagram

A. Headlight—right
B. Headlight—left
C. Ignition distributor
D. Ignition coil
E. Generator
F. Starter motor and solenoid
G. Horns
H. Signal light switch
J. Headlight cables terminal block
K. Cable connector
L. Headlight dimmer foot switch
M. Ignition switch and lock
N. Ignition switch light
P. Fuel gage (panel unit)
Q. Horn button
R. Instrument light—right
S. Headlight bright beam indicator light
T. Instrument light—left
U. Instrument light switch
V. Head and tail light switch and circuit breaker
W. Ammeter
X. Voltage regulator

Y. Cable connector
Z. Battery
AA. Fender light—right
BB. Fender light—left
CC. Horn relay
DD. Automatic choke unit
EE. Cigar lighter (convertible coupes)
FF. Windshield wiper motor
GG. Windshield wiper switch and circuit breaker
HH. Starter switch
JJ. Reading light pillar switch
KK. Reading light automatic door switch (4-door sedans—New Yorker and Saratoga)
LL. Tail and signal light—right
MM. Fuel gage (tank unit)
NN. Reading light
PP. Rear license plate light

QQ. Cable connector
RR. Tail and signal light—left

1-8. Spark plug cables (high tension cable)
9. Red
10. Yellow
11. Black
12. Secondary cable (high tension cable)
13. Primary cable (black)
14. Ignition switch cable
15. Red
16. Green
17. Red
18. Yellow
19. Black
20. Red
21. Red
22. Green
23. Green
24. Red
25. Red
26. Brown
27. Black and Yellow
28. White
29. Green
30. Black

31. Black
32. Brown
33. Brown
34. Blue
35. Red
36. Green
37. Red
38. Black
39. Brown
40. Black
41. Black
42. Black
43. Brown
44. Brown
45. Yellow
46. Red
47. Black
48. Starter cable and terminal (—) negative
49. White
50. Red
51. Battery ground cable and terminal (+) positive
52. Red
53. White
54. White
55. Yellow
56. Black and yellow
57. Blue
58. Red

SUPERCHARGER ON FORD

I have a Model A Ford speedster on which I would like to put a Graham supercharger. I have worked out the cooling and lubricating systems for this but I cannot determine what size pulley to drive it with. The Graham that the supercharger came from, was a 217.8 cu. in. motor developing 116 hp. at 4000 r.p.m. with the supercharger and 90 hp. at 3600 r.p.m. without the supercharger. Should the pulley be in proportion to piston displacement, horsepower, r.p.m. or what? The Model A develops about 60 hp. at 3500 r.p.m. (it has a few altera-

tions) and is a 200.5 cu. in. motor. Should I make the pulley smaller and turn the supercharger faster for maximum efficiency or would this likely burn the supercharger up? Approximately what increase in power and r.p.m. would the supercharger give me at maximum efficiency? If this cannot be figured out in any accurate proportions, I would like to have a rough estimate. Douglas Fife, Gene Woods Garage, Water St., Charlottesville, Va.

WHEN installing a Graham Supercharger on a Model A Ford, I would select the pulleys so as to drive

the supercharger at about 4000 r.p.m. when the engine is at its maximum top speed. In other words, if you have a 6-inch pulley on the crankshaft end, you would need a 3.15-in. diameter pulley on the supercharger side. Putting it another way, the supercharger will be driven at approximately twice engine speed.

It's difficult to say exactly what increase in power you could get from the use of this supercharger on the Model A Ford, but my guess is that at top engine speed, your power would be increased to approximately 70 hp., which, of course, includes the other improvements you have made.

MAKES SLUDGE

I service a R F 37 1938 Dodge truck that seems to manufacture sludge in the crankcase too fast. In the valve chamber there will be big chunks of carbon. As it builds up a deposit it gets hard.

I put an oil cleaner on it but it doesn't do much good. This truck is operated on what would be called heavy-duty work. It hauls heavy loads of gasoline.

What I would like to know is could this condition be blamed on the oil, or the conditions under which the truck is operated? Arthur J. Bell, Bell Garage, Roachdale, Ind.

THE formation of sludge is a very difficult condition to combat because to the best of my knowledge, it cannot be blamed on any one particular thing. You can retard its formation somewhat by installing a good oil filter and replacing the filter cartridge at frequent intervals to be sure it is doing a good job of removing impurities from the oil and this will help some. You can also install a good air cleaner preferably of the oil type which will help some in removing impurities from the air which otherwise would eventually find their way into the crankcase. You can also install an air filter or cleaner on the crankcase breather pipe which will have a tendency to keep impurities from the air out of the crankcase. Regular flushing of the crankcase to clean out the impurities that have accumulated is also a help.

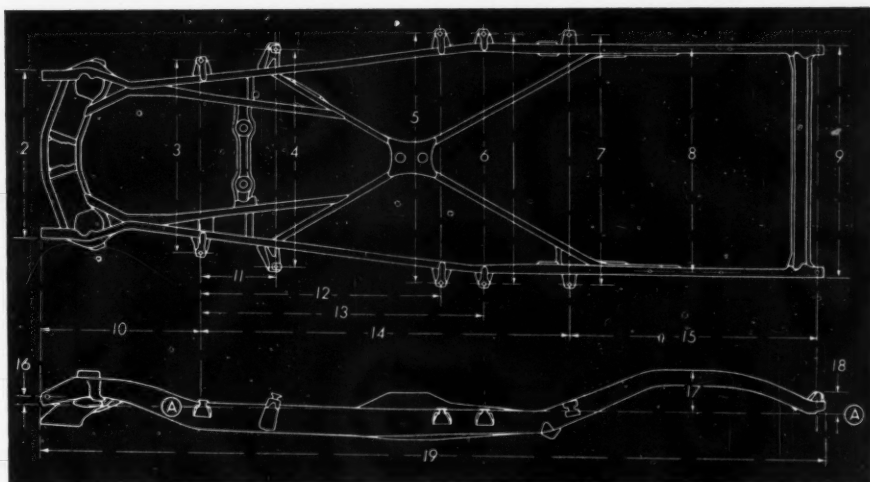
You realize of course that there is more condensation in the crankcase when the truck is used on short runs where there is considerable stopping and starting. This however, is a condition that cannot be helped in so far as the use of the truck is concerned, and the only thing you can do is install such safeguards as you can to control this condensation which eventually turns to sludge. I do not believe that you can truthfully blame the condition on oil or gasoline or any other single factor. It is a combination of all of these conditions.

TAPPET NOISE

We have a 1938 L-38 Oldsmobile 8-cylinder motor number C2188569 which has run 28,000 miles.

For the past three months it has had a noise that sounds like a tappet. We adjusted tappets, still the noise. Then the motor was taken down, valves refaced, etc., springs tested, lifters checked, camshaft checked, new timing chain installed and piston rings and wrist pins inspected. Oil pump and distributor inspected. Still the noise.

This is one question that will need a lot of attention given to it as you have been put on the spot to see if you



1940 Chrysler Frame Diagram

C25	C26	C27
A. Top line of frame		
2. 35 (35 1/8—7-pass.)	35 1/8	35 1/8
3. 40 1/2 (40 3/8—7-pass.)	40 1/2	40 3/8
4. 45 3/4 (45 1/8—7-pass.)	45 3/4	45 1/8
5. 52 3/4	52 3/4	52 1/2
6. 52 1/2 (52 1/8—7-pass.)	52 1/2	0
7. 52 1/8 (52 3/8—7-pass.)	52 1/8	52 3/8
8. 46 3/4	46 3/4	46 3/4
9. 48 1/4 (48 3/8—7-pass.)	48 1/4	48 3/8
10. 36 1/2	42 1/2	42 1/2
11. 14 3/4	14 3/4	14 3/4
12. 50 3/4	50 3/4	59 3/4
13. 59 3/4	59 3/4	0
14. 77 3/4 (94 3/8—7-pass.)	77 3/4	94 3/8
15. 53 1/2	53 1/2	53 1/2
16. 1 3/4 (1 1/8—7-pass.)	1 3/4	1 1/8
17. 9 3/8	9 3/8	9 3/8
18. 5 3/8	5 3/8	5 3/8
19. 169 3/4 (186 3/8—7-pass.)	175 3/4	192 3/4

can shoot trouble (all of East Bay section—Motor Trades Association is waiting for your solution).

Docherty's Garage,
2576 Grove Street, Oakland, Cal.

FROM the description you have given of your trouble, it would seem that it comes at camshaft speed. On the 1938 Olds, they have had some trouble with a noisy fuel pump which was overcome by changing the straight coil spring to a spring having a cone-like shape. I would suggest that you try running this car without the fuel pump and see if the noise is eliminated.

While you have checked the lifters, there is a possibility that one of the lifters has become cracked. This crack would be very fine and rather difficult to see with the naked eye. In this connection, I would suggest that you try holding each of the valves and lifter assemblies in the fully opened position, one at a time, to see if the noise is eliminated. If you find that the noise is eliminated when one particular valve is held open, your trouble is undoubtedly in the particular assembly.

Similar noise sometimes results from a cylinder head gasket which extends over the cylinder bore. Then when the piston comes to the top of the stroke, it strikes this gasket resulting in a noise. However, the noise is more like a knock than a tappet sound.

Here's hoping that this will solve

your trouble, and I'd appreciate your dropping me a line to let me know how you make out.

AUTOMATIC TRANSMISSION

I have a customer with a 1938 Oldsmobile 8 with an automatic transmission that he says doesn't seem to go in gear at times. As he tries to leave after making a stop in traffic, he often has to shift around with it before it takes hold. He says it has the proper type lubricant in the transmission.

Would you please send me information on this transmission as to what may be the trouble and how to correct it? Thank you. Howard F. Meyers, S & M Garage Service, 3502 E. 10th St., Long Beach, Cal.

JUDGING from your description, it would seem to indicate something wrong with the clutch plate in that it does not release its grip on the flywheel. This condition has developed in other cases and has been corrected by either installing a new plate, or by removing the old plate and cutting slots in the facing on the flywheel side, so as to admit air between the clutch plate and the flywheel to break up a partial vacuum that appears to be created when the clutch has lost some of its "dish" shape.

(Continued on next page)

(Continued from preceding page)

Another step that should be performed in addition to slotting the clutch plate is the installation of what is known as a clutch brake washer, Oldsmobile part No. 1306495. If you have access to a 1939 Oldsmobile Shop Manual and will turn to page 195, you will see where this washer is installed. It fits on the shaft of the front unit drive gear immediately in back of the clutch gear. This washer has three prongs which are designed to fit into slots in the splines of the front unit drive gear. On some of the earlier models, these slots were omitted and if that is the case with yours, it would be necessary for you to break off these prongs and use simply the flat part of the washer.

I feel quite sure that this work will overcome your trouble and that it will not be necessary to make interior adjustments in the transmission itself.

VIBRATION

I would like to have you help me out on a problem that I have on a 1938 La Salle. The engine on this car has a severe vibration at 30 miles an hour, and I am at a loss to know what is causing it. The engine has never been pulled down and the pistons and rods have never been out.

I thought the fan was out of balance, so I took it off and balanced it, although it helps a little, it is not enough to notice. I have tuned up the motor and everything seemed to be perfect—both the distributor and carburetor. This engine has plenty of power and runs smoothly at low speed.

I have worked on a lot of Cadillac and La Salle cars, and I know this vibration is not a characteristic condition of this type motor, and all other ones that I have worked on have run smoothly.

This vibration is so severe at 30 miles an hour, that you can feel it all through the car. But around 50 or 60 it is not quite so severe.

Being a subscriber of Chilton's for the last four years, I thought you might be able to give me some information on this matter, which I would appreciate very much. I am positive this vibration is in the motor, because when the car is standing still and I speed up the motor the vibration goes through the car.

Joseph L. Buote, 271 Reservoir Avenue, Providence, R. I.

THERE are two possible causes for this condition, and I believe I would first check the engine mounting. I have heard of a similar case and the trouble was eliminated by installing new engine mountings, as it was found that one of the old mountings was cracked. At any rate, I believe I would check these first and, as a matter of fact, I think you would be justified in installing new mountings front and rear on this job, considering the fact that they have already been in service somewhat over a year.

The other possible cause of this condition is a defective vibration damper on the front end of the crankshaft. If this damper is not operating properly, it will, of course, permit vibration to be felt at critical engine speed throughout the speed range, and there is no way by which this condition can be eliminated except to install a new vibration damper.

I would particularly check ignition timing and check the distributor shaft bushing for wear. It would also be well to check for a worn water pump shaft, because this might very well be responsible for engine vibration.

OIL LEAKS

I have a 1933 Master Chevrolet coupe. I can't keep oil from leaking out of the front timing case. The oil comes out of the front main bearing and floods the timing gear case. Now here is what I have done—I put a new timing gear case and a new oil slinger on. I made sure the return hole in the front main was open. The front main has no play in it. I put air pressure on the oil line that runs from the front main bearing to the rear main. I took the oil cap off to relieve any pressure if there was any in the crankcase.

The oil comes through past the oil slinger. It drains the whole crankcase in a day.

Can you tell me anything to do that I haven't done? William Salerno, 2523 S. 76th St., Philadelphia, Pa.

IN reference to the leak you are having at the oil slinger on the 1933 Master Chevrolet, there is a possibility that it may be caused by improper installation of the timing gear cover. The timing gear cover oil seal must be properly centered around the hub of the fan driving pulley before tightening the cover in place. Centering of the timing gear cover may be accomplished by using the hub of the fan drive pulley for a gage.

In other words, first place the timing case cover in position and then slip the fan drive pulley in place. The hub will then correct the position of the cover. Then tighten up on the screws holding the timing case cover in place.

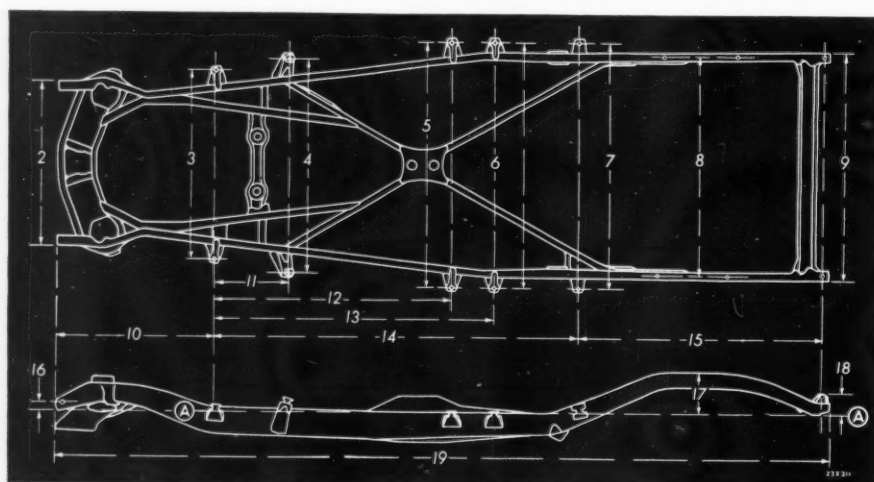
I am also wondering if the timing gear oil nozzle is correctly positioned. This should be placed so that it will squirt oil directly on the teeth of the crankshaft and camshaft gears. It sometimes happens that the oil nozzle is broken off and consequently excessive oil is supplied to the gears and a leak results.

SHOP KINKS

(Motor Age will pay one dollar for each shop kink presented in this department. Address your contributions to Motor Age, 56th & Chestnut Sts., Philadelphia, Pa.)

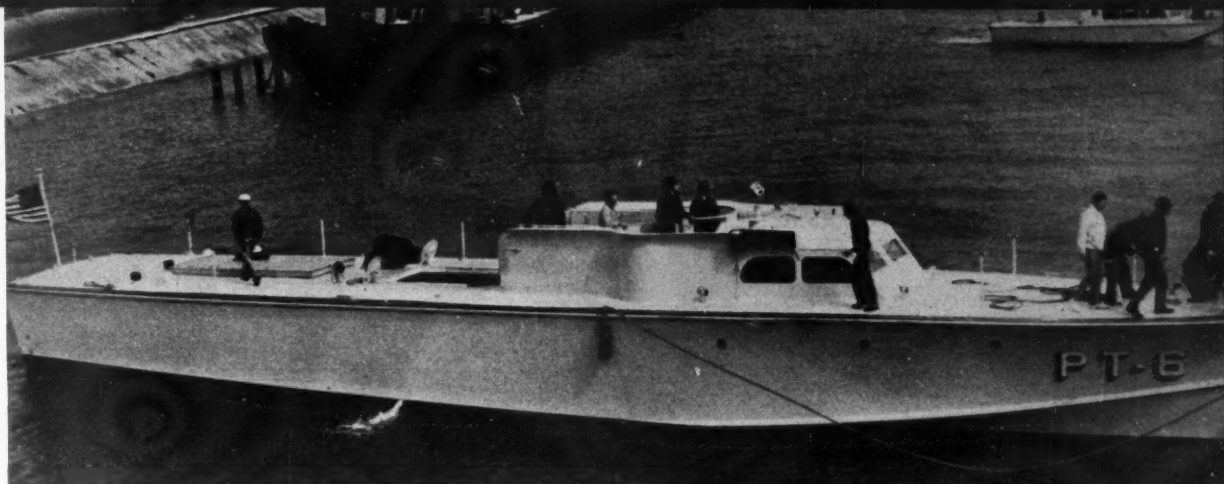
HERE'S a kink that I believe all front end men, especially the fellows who do axle straightening on Ford cars or trucks, will find a big help.

When bending Ford axles up or down its hard to keep from bending them forward as well on account of the caster tip of the axle and curve. Make two hooks for your wheel puller—18 in. or larger and put it on the axle so the screw rests where your jack will make the bend. A little tension on the puller will make the axle stay put and not bend forward.—A. H. Wild, Springfield, Minn.



Frame Diagram 1940 Plymouth

- | | | |
|--------------------------------|---------------------------------|---------------------------------|
| 1. Top line of frame | 8. 46% | 15. 50 13/16 (53 13/16—7 Pass.) |
| 2. 35 (35 1/8—7 Pass.) | 9. 48 1/4 (48 5/16—7 Pass.) | 16. 1% (1 11/32—7 Pass.) |
| 3. 40 1/2 (40 1/8—7 Pass.) | 10. 34 11/32 | 17. 9 5/16 |
| 4. 45 5/8 (45 1/8—7 Pass.) | 11. 14 23/32 | 18. 5 1/32 |
| 5. 52% | 12. 50 3/32 | 19. 164% (184 13/32—7 Pass.) |
| 6. 52 15/32 (52 17/32—7 Pass.) | 13. 59 5/32 | |
| 7. 52 9/16 (52 5/8—7 Pass.) | 14. 77 27/32 (94 27/32—7 Pass.) | |



(Above) The nation's newest type torpedo boat shown before making a test run for naval experts on Lake Pontchartrain, La. Because of the newness of its engines, no attempt was made to reach the maximum speed believed to be about 60 m.p.h. This was the first boat to be launched under the \$5,000,000 building program authorized by Congress last year to perfect speedy craft capable of challenging an invading fleet. Cost of this boat was \$218,000.



(Left) Specially designed reconnaissance vehicles included in a U. S. Army order with Chrysler Corp. for 10,786 Dodge trucks must be able to go up a 60 per cent grade, similar to the ramp shown here, with a full load. They must also do 45 m.p.h. on the level.

(Below) Clayton Bishop drives his "Humarock Baby" across the finish line as he wins for the third time the annual Albany to New York 150-mile marathon on the Hudson River. Bishop, a few seconds after this picture was taken was awarded the William Randolph Hearst trophy, which annually goes to the first outboard hydroplane to finish the gruelling test.



(Above) New ideas in streamlining and mechanical contrivances were built into this experimental Buick model conceived by General Motors stylists and Buick engineers. Disappearing headlights, flush-type door handles, completely concealed automatic top, electrically operated window regulators, smaller wheels with airplane type air-cooled brakes, a new bumper guard and license plate combination and other innovations are incorporated in this car. It has a 123 in. wheelbase, and is powered by a Buick series 50 Super, 107 hp., valve-in-head straight eight engine.





Barrett salesmen and distributors receiving instruction in one of the classes of the new Barrett Service Training Schools operated by Barrett Equipment Co., St. Louis. In addition to the training of salesmen and distributors, it is planned to offer the course to one person in each organization installing the complete Barrett system. Later on, according to Mr. Barrett, there will be regular classes open to all brake mechanics.

Reports Success

With Rayon Tires

Rayon cord tires have achieved mileage records as high as 3000 per cent above standard tire performances, William H. Bradshaw, director of rayon research for E. I. du Pont de Nemours & Co., reported in an address before the general session of the American Chemical Society.

A new rayon developed specifically for tires has produced "astounding results," under severe temperature and load conditions, he told the society. He cited "carefully controlled tests covering many millions of miles."

On an overloaded high-speed run in a hot country, rayon tires gave 80,000 miles of service in circumstances that wore out ordinary tires after 3000 miles. In another instance, the rayon cords held up for 18,000 miles of duty under the same 106 deg. temperature which ended the usefulness of standard tires in 600 miles.

Rayon for tires was introduced by du Pont under the name "Cordura." Mr. Bradshaw disclosed it has a higher tensile strength than structural steel, and is twice as strong as the rayon employed for ordinary textile fabrics.

NAPA to Promote Product Identification

One of the broadest and most comprehensive programs of product identification ever undertaken in the parts industry has been placed in operation by the National Automotive Parts Association and its associated manufacturers, according to announcement by Henry Lansdale, general manager of the organization.

All products distributed by NAPA are now identified by a newly-adopted seal which carries with it NAPA's

"Assurance of Quality." Coincident with the adoption of the seal and its placement on all products, the first of a series of advertisements explaining the meaning of the seal, as well as the purposes of NAPA, has appeared in a list of leading automotive trade publications. The advertising program will continue steadily and is sponsored jointly by the National Automotive Parts Association and the manufacturers whose products are distributed through the organization.

"This program is a natural step for NAPA," said Mr. Lansdale, "Every line adopted by the National Automotive Parts Association for distribution must first pass a thorough and complete investigation."

"Through the advertising campaign which already has started in the automotive trade press, and through various other means, we believe that the NAPA seal will become as well known

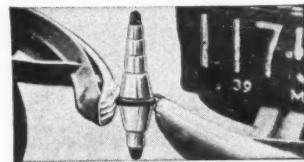
to the automotive service man, and as confidently relied upon, as any trade mark in existence, no matter on what type of part it appears. It will afford the repairman a degree of protection in his purchase of parts which in many cases does not now exist."

Colaweld Metaljoiner

The latest product of Colonial Alloys Co., Chemicals Division, E. Somerset, Trenton Ave. and Martha St., Philadelphia, Pa., is Colaweld "Metaljoiner," a product for joining aluminum or aluminum alloys to each other or to other metals. The joint produced is the result of the fusion of molten Colaweld Metaljoiner surfaces with each, and the alloying deposition of the product with the surfaces of the base metals joined. Light gages can be joined by Colaweld Metaljoiner, the manufacturer claims, without fear of burning, distortion or annealing of the metals because only low heat is required.

Spring Action Fender Guard

Signal Mfg. Co., 587 Washington St., Lynn, Mass., has introduced a new type of fender guard. It is circular in shape, 2½ in. in diameter and 11 in. high, reinforced inside to absorb shocks, and has a rubber at its largest diameter to provide rolling off action on all objects. The guard is mounted to the bumper with a spring steel bracket to further assist in ab-



sorbing shocks. Its height prevents interlocking with bumpers of other cars. Finished in chrome, with bracket bonderized and finished in baked enamel. List price \$3.25 each.



But I haven't got a car!

of a DIFFERENT COLOR!



To really visualize the results of Thermodized Pre-Stretching . . . take a look at the picture. Here you see a little over 1500 pounds of horse getting a lift from a Thermodized Pre-Stretched Fan Belt. This belt was borrowed from service in an automobile. After the experiment it was returned to its normal service, and the belt worked perfectly at the original adjustment.

Shock Absorber Fluid Capacities

CAR MAKE AND MODEL	Shock Absorber Make	Shock Absorber Model No. Front	Shock Absorber Model No. Rear	Amount of Fluid (Oz.) Front	Amount of Fluid (Oz.) Rear	CAR MAKE AND MODEL	Shock Absorber Make	Shock Absorber Model No. Front	Shock Absorber Model No. Rear	Amount of Fluid (Oz.) Front	Amount of Fluid (Oz.) Rear
BUICK 40-60-80-90.....1938	Delco		1100S		10½	HUDSON-TERRAPLANE 80-81-82.....1938	Monroe	156577	156578	5	5
CHEVROLET Master-JB.....1939	Delco	1116M		5¾		NASH 38-20, 38-80.....1938	Delco	1187K	1189N	5½	5¾
Master-KB.....1940	Delco	1000N		5½		38-20, 38-80.....1938	Gabriel	B6001	B6501	5½	5¾
CHRYSLER						39-20.....1939	Delco	1112P	1117DD	5¾	8½
C14.....1937	Monroe	665566	665899	3¾	5½	39-80.....1939	Delco	1112M	1117DD	5¾	8½
C15.....1937	Monroe	665567	665899	4½	5½	39-20, 39-80.....1939	Gabriel			5¾	8½
C16.....1937	Monroe	665568	665899	3¾	5½	40-20, 40-80.....1940	Delco		1006DD		8½
C18.....1938	Monroe	676739	682604	4	5½	NASH LAFAYETTE 3810.....1938	Delco	1187K	1189N	5½	5¾
C19, C20.....1938	Monroe	683091	682604	4	5½	3810.....1938	Gabriel	B6001	B6501	5½	8½
C22, C23.....1939	Monroe	696240	696242	3¾	6½	3910-Special.....1939	Delco	1112N	1117DD	5½	8½
C22, C23.....1939	Delco	1110C	1111T	3¾	6½	3910-De Luxe.....1939	Delco	1112Q	1117DD	5¾	8½
C24.....1939	Monroe	696241	696242	3¾	6½	3910.....1939	Gabriel			5¾	8½
C24.....1939	Delco	1134E	1130W	6¾	12	4010.....1940	Delco		1006DD		8½
C25, C26.....1940	Monroe	854568	854570	3¾	6¾	PACKARD 1800.....1940	Monroe		11186		6¾
C25, C26.....1940	Delco	1000C	1001T	3¾	6¾	1801.....1940	Delco		1001V		6¾
C27.....1940	Delco	1134E	1130W	6¾	12	1803-1806.....1940	Monroe		11187		6¾
DE SOTO						PLYMOUTH P3-P4.....1937	Delco	1162U	1163U	6¾	6¾
S3.....1937	Delco	1162G	1163U	4½	6¾	P5-P6 (Early).....1938	Delco	1162U	1163U	6¾	6¾
S5 (Early).....1938	Delco	1162D	1163U	4	6¾	P5-P6 (Late).....1938	Delco	1177T	1178T	6½	6½
S5 (Late).....1938	Delco	1177C	1178T	3¾	6½	P7-P8.....1939	Delco	1110C	1111T	3¾	6½
S6.....1939	Delco	1110C	1111T	3¾	6½	P9-P10.....1940	Delco	1000C	1001T	3¾	6½
S7.....1940	Delco	1000C	1001T	3¾	6½	PONTIAC 26CA, 28CA.....1937	Delco		1174U		6¾
DODGE						26DA-28DA.....1938	Delco		1193U		6¾
D8 (Early).....1938	Delco	1162U	1163U	6¾	6¾	25EA-26EB.....1939	Delco		1116V		6¾
D8 (Late).....1938	Delco	1177T	1178T	6½	6½	28EA.....1939	Delco		1116V		6¾
D11.....1939	Delco	1110C	1111T	3¾	6½	25-26-28.....1940	Delco		1000V		6¾
D14, D17.....1940	Delco	1000C	1001T	3¾	6½	REO 6A-6D.....1935-36	Monroe	19535	19536	4	5
GRAHAM						4S-5S-7S.....1934-35	Monroe	290	291	4	5½
72, 73, 75.....1935	Spicer	J20	6A	*	*	STUDEBAKER 5A.....1937	Delco	1173L	1172U	5½	6¾
74.....1935	Spicer	F20	C10-5A	*	*	6A.....1937	Delco	1171S	1172U	6½	6¾
72, 73, 75.....1935	Delco†	1150A1	1150A2	4¾	4¾	3C.....1937	Delco	1171S	1172X	6½	7½
74.....1935	Delco†	1152A4	1150A5	4¾	4¾	TERRAPLANE K-KU-KS.....1934	Monroe	46730	46646	4	5
80.....1936	Delco	1152A14	1150A7	4¾	4¾	K-KU-KS.....1934	Monroe†	46949	46950	4	5
90, 110.....1936	Delco	1150A6	1150A13	4¾	4¾	G-GU.....1935	Monroe	47258	47264	4	5
85.....1937	Delco	1165L	1166K	5½	5½	61-62.....1936	Monroe	150421	150423	4	5
95, 116, 120.....1937	Delco	1166K	1166K	5½	5½	70-71-72.....1937	Monroe	635702	635703	5	5
96, 97.....1938	Delco	1161K	1163P	5½	5½	WILLYS 37.....1937	Monroe	152941	152942	3¾	4¼
96, 97.....1939	Delco	1112J	1120N	4¾	5½	38.....1938	Monroe	635702	635703	3¾	4¼
HUDSON						48 (Early).....1939	Monroe	637509	637508	3¾	4¼
LT, LTS.....1934	Monroe*			4	5	48 (Late).....1939	Monroe	637798	637799	4¼	5½
LL.....1934	Monroe*			4	5½	440.....1940	Monroe	638316	638317	4¼	5½
LT, LTS.....1934	Spicer			4¾	5	WILLYS-OVERLAND 39 (Early).....1939	Monroe	637509	637508	3¾	4¼
LL.....1934	Spicer			4¾	5½	39 (Late).....1939	Monroe	637798	637799	4¼	5½
LT, LTS, LL.....1934	Delco†	1153A10	1154B9	4¾	5½						
GH, HT, HU, HHU.....1935	Spicer	J10	F14-3A	4¾	5½						
GH, HT, HU, HHU.....1935	Delco†	1152A10	1151B9	4¾	5½						
63, 64, 65, 66, 67.....1936	Delco	1152A6	1151C7	4¾	5½						
73, 74, 75, 76, 77.....1937	Delco	1175S	1174T	6½	6½						
83, 84, 85, 87.....1938	Delco	1164S	1163T	6½	6½						
89 (112).....1938	Monroe	156778	156779	5	5½						
90 (112).....1939	Monroe	156778	156779	5	5½						
90 (Late).....1939	Monroe			6	6½						
91 (Early).....1939	Monroe			5	5½						
91 (Late).....1939	Monroe			6	6½						
92 (Early).....1939	Monroe	157400	157401	5	5½						
92 (Late).....1939	Monroe			6	6½						
93-95-97 (Early).....1939	Delco			6½	6½						
93-95-97.....1939	Delco	1113R	1120S	6½	6½						
40-41-42-48.....1940	Monroe	160101	160107	3¾	6¾						
43-45-47.....1940	Delco	1007C	1008S	3¾	6¾						

*—Remove shock absorber from car and fill through filler hole until fluid rises to top of bleeder hole

†—Replaces original equipment for service

*—Monroe used on some cars

†—Cannot be dismantled or refilled

■—Spicer Nos. D10-F10-H10-J10-K20

▲—Spicer Nos. C11-C12-C13-E11-F12-H22-H23-3A

Smart Promotion

Builds Business

Taking advantage a short time ago of the "Confucius Say" craze, Harold L. Willis, proprietor of the Monroe Super Service Garage, Peoria, Ill., conducted a license number stunt in which "Willis Says" played an important part in the newspaper advertising.

The ads used were two-inch ads. They contained a picture of Mr. Willis. The heading was "Willis Says," followed by the text, "Watch our window for your license number—it means a Free car wash and lubrication."

Mr. Willis took over the garage last October after two operators had failed

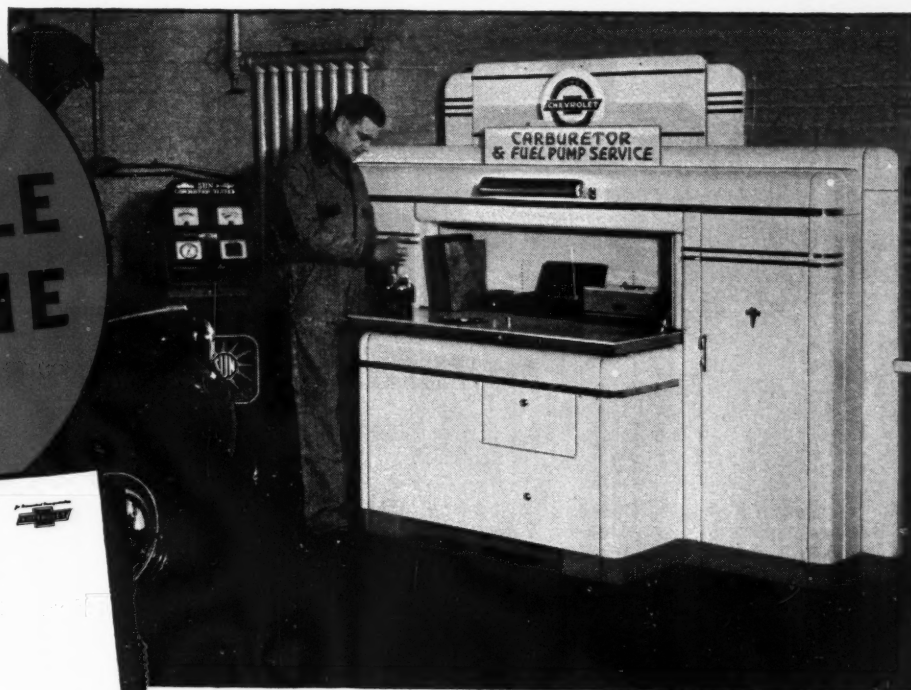
in the business. The license number stunt was chosen in order to direct attention to the garage. He chose license numbers of cars that he saw frequently go past the garage and which, from the appearance of the cars, he thought would make desirable customers.

Each week for four weeks he chose a license number and painted it on the front window. The only advertising used was the two-inch newspaper ad. Three of the four owners of license numbers shown appeared and received the free service offered. The other one, which parked frequently near the garage, failed to respond, evidently not seeing the ad.

"It is altogether likely," says Mr. Willis, "that the three who responded

will remain with us as permanent customers. We undoubtedly received other new customers from the large number who peered at our windows as they drove by looking for their license numbers. During the four weeks we ran the ad, we had a number of new customers. We have no way of definitely checking them to see which ones came in as a result of seeing the ad and looking at our windows as our business has been increasing anyway, but we are certain that part of the new faces we have seen came in as a result of the stunt. At any rate, it accomplished what we set out to do—it caused hundreds of persons to look at our windows each time they went by. We figure these persons think of us when in need of service."

**"IT WAS
NO GAMBLE
TO BE THE
FIRST"**



PARK SLOPE CHEVROLET, Inc.
354 FLATBUSH AVENUE
BROOKLYN, N. Y.

March 28, 1940

Lincoln Engineering Company
5701 Natural Bridge Avenue
St. Louis, Mo.

Gentlemen:-

You will no doubt be interested to know that we are well pleased with our Lincoln Service Merchandiser. It was no gamble to be the first in New York to have this excellent equipment. It inspires customer confidence, it is so clean, attractive and so business-like.

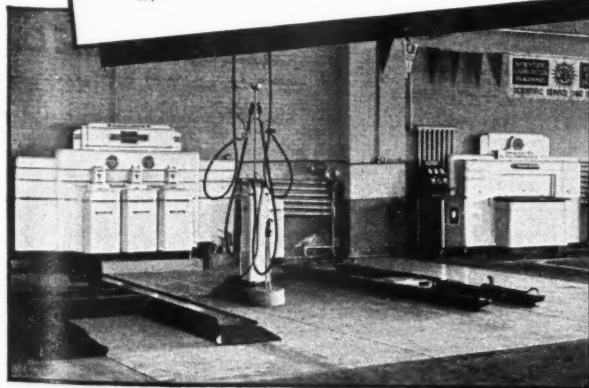
Your design greatly facilitates the actual service work, as well as being a remarkable Service Merchandiser. A check of our records proves that our Carburetor and Fuel Pump Department is one of the most profitable divisions in our entire set-up.

There is no question as to the part played by the Lincoln Service Merchandiser in this department.

We are considering additional units for other departments in the very near future.

Yours very truly,
PARK SLOPE CHEVROLET, INC.
BY *[Signature]*
TREASURER - S. ROWER

SR/MD



In addition to installing a Lincoln Service Merchandiser, Park Slope Chevrolet, Inc. also installed a new Lincoln Wall Battery, as shown above. This ultra-modern lubricating equipment instantly arouses customer interest, and the efficiency of the equipment wins customer satisfaction.

LINCOLN SERVICE MERCHANDISER

**inspires customer confidence, it is
so clean, attractive and so business-like**

... writes Park Slope Chevrolet, Inc., Brooklyn, N. Y.

Mr. S. Roder of Park Slope Chevrolet, Inc., Brooklyn, N. Y., was 100% right when he wrote "You will no doubt be interested to know that we are well pleased with our Lincoln Service Merchandiser. *It was no gamble to be the first* in New York to have this excellent equipment... The design greatly facilitates the actual service work, as well as being a remarkable Service Merchandiser."

Investigate, and you will quickly recognize how Lincoln Service Merchandisers put eye-appeal into the merchandising of departmentalized service. There is one of these Merchandisers to feature your brake service, one for carburetor and fuel pump service, for engine, for transmission, for rear axle, for steering, for shock absorbers, for lighting—and many others... The Lincoln Service Merchandiser (Design Patent No. 119063) is made of heavy gauge steel, and has the following features:

- All-steel Built-in Bench
- Specialized Tool Compartment
- General Tool Compartment
- Specialized Service Sign
- Modernistic Chrome Bench Light
- Utility Compartment
- Parts Washer
- Blow Gun
- Electrical Outlet

You can start with one or more Service Merchandisers, and add units as your business grows.

For details and prices—consult your Lincoln jobber or write us

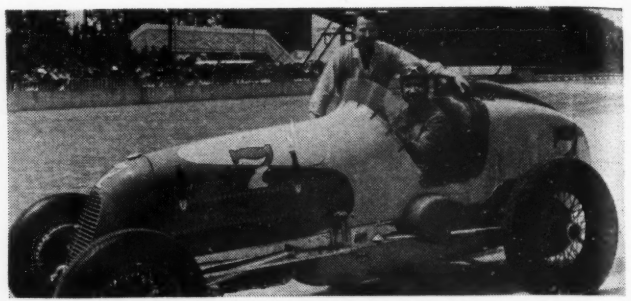
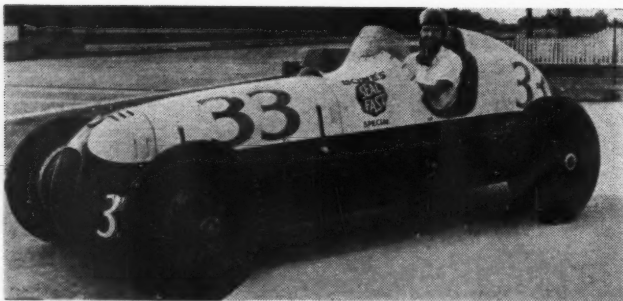


LINCOLN ENGINEERING COMPANY

Pioneer Builders of Engineered Lubricating Equipment

ST. LOUIS, MO., U. S. A.





Rex Mays finished second with his Bowes Seal Fast Special, Mauri Rose followed him to place third

Indianapolis Entrants

Car No.	Name	Driver	Engine Make	No. Cyl.	Bore	Stroke	Displacement	Supercharged	Spark Plugs	Ignition	Ignition Cable	Piston Rings	Carb.	Wheel Suspension	Shock Absorbers	Weight	Qualifying Time		
1	Boyle Spl.	Wilbur Shaw	Mas	8	2.677	3.937	178.1	Y	C C C C	B B	P P	P.C.C.	2	Me	R R	Ind	2010	127.065	
2	Boyle Spl.	Ted Horn	M	8	3.375	3.750	268.0	N	C C C C	B B	P P	P.C.C.	2	W	R R	Ind	1950	125.545	
3	Wheeler's Spl.	Babe Stapp	M	8	2.285	3.000	96.6	Y	C C C C	B B	P P	P.C.C.	1	W	R R	Ind	1448		
4	Noc-Out Hose Clamp Spl.	Cliff Bergere	O	4	4.327	4.625	270.0	N	C C C C	B B	P P	P.C.C.	2	W	R R	Ind	1938	123.573	
5	Hollywood Pay-Day Spl.	Geo. Barringer	O	4	4.250	4.500	255.0	N	C C C C	B B	P P	P.C.C.	2	T	R R	Ind	1826	121.889	
6	Elgin Piston Pin Spl.	Mauri Rose	O	4	4.312	4.625	270.0	N	C C C C	B B	P P	P.C.C.	2	W	R R	Ind	1900	125.624	
7	Thorne-Donnelly Spl.	Joe Thorne	S	6	3.530	4.825	272.0	N	C C C C	B B	P P	P.C.C.	6	W	R R	Ind	1974	122.432	
8	Boyle Spl.	Frank Wearne	O	4	4.265	4.500	255.0	N	C C C C	B B	P P	P.C.C.	2	W	R R	Ind	1795	123.216	
9	Lencki	Geo. Connors	L	6	3.750	4.000	265.0	N	C C C C	B B	P P	P.C.C.	4	W	R R	Ind	1905	124.585	
10	Schoof Spl.	Lewis Durant	O	4	4.250	4.500	255.0	N	C C C C	B B	P P	P.C.C.	2	W	R R	Ind	1784	117.218	
11	Hollabird Tenn. Red Cedar	Billy Devore	O	4	4.250	4.500	255.0	N	C C C C	B B	P P	P.C.C.	2	W	R R	Ind	1791	122.179	
12	Elgin Piston Pin Spl.	Frank Brisko	B	6	3.625	4.375	271.0	N	C C C C	B B	P P	P.C.C.	3	W	F C C C	D H	1963	122.716	
13	Keller Spl.	G. Robson	O	4	4.250	4.500	255.0	N	C C C C	B B	P P	P.C.C.	2	W	F C C C	D H	1925	122.562	
14	Snowberger Spl.	R. Snowberger	M	4	4.250	4.500	255.0	N	C C C C	B B	P P	P.C.C.	2	W	F C C C	D H	1879	121.564	
15	Marks-Offenhauser Spl.	Duke Nalon	O	4	4.270	4.500	256.0	N	C C C C	B B	P P	P.C.C.	2	M	R C C C	B H	1790	121.790	
16	Lucy O'Reilly Schell Spl.	Rene Dreyfus	Mas	8	2.716	3.937	182.5	Y	C C S	P	P.C.C.	2	Me	R	Ind	C B	1968	118.831	
17	Surber Spl.	Shorty Cantlon	O	4	4.320	4.500	262.0	N	C C S	P	P.C.C.	2	M	R	C C C	B H	1837	123.367	
18	Belanger-Foltz Spl.	Emil Andres	O	4	4.260	4.500	256.0	N	C C B	P	P.C.C.	2	W	R	C C C	D Hart	1886	122.963	
19	Falstaff Spl.	Louis Tomei	O	4	4.312	4.625	270.0	N	C C B	P	P.C.C.	2	W	R	C C C	B H	2080	119.984	
20	Marks Spl.	Tommy Hinnershitz	O	4	4.312	4.625	270.0	N	C C B	P	P.C.C.	2	W	R	C C C	B H	1886	122.624	
21	Leon Duray Spl.	Sam Hanks	D	4	3.812	4.000	182.0	Y	C C B	P	P.C.C.	2	M	R	C C C	B H	1886	123.064	
22	Maserati	Raul Riganti	Mas	8	3.060	3.060	180.0	Y	C C S	P	Mas	2	Z-Me	R	Ind	C B	2035	121.827	
23	Hartz Spl.	Mel Hanson	M-H	8	2.875	3.500	182.0	Y	C C B	P	P.C.C.	1	S	F	C C H	H H	1901	124.753	
24	Sampson Spl.	Bob Swanson	Samp.	16	2.187	3.000	183.0	Y	C C B	P	A.H.	2	W	R	C Ind	H H	2216	124.619	
25	Bowes Seal Fast Spl.	Rex Mays	Bowes	8	2.968	3.250	179.6	Y	B B	P	P.C.C.	2	W	R	C C H	H H	1951	127.850	
26	Alfa-Romeo Spl.	Chet Miller	A-R	8	2.717	3.937	182.6	Y	C C B	P	B	2	We	R	Ind	C B	1902	121.322	
27	Indiana Fur Spl.	Kelly Pettito	O	4	4.312	4.625	270.0	N	C C B	P	B	2	W	R	C C C	B H	1951	125.331	
28	Quillen Bros. Spl.	Doc Williams	M	4	4.250	4.500	255.0	N	C C B	P	P.C.C.	2	W	F	C C C	D Hart	1886	122.963	
29	Kimmel Spl.	Lou Webb	V	12	2.750	3.703	267.0	N	C C B	P	P.C.C.	4	Z	R	C C C	B H	2009		
30	Elgin Piston Pin Spl.	Paul Russo	B	6	3.625	4.375	271.0	N	C C B	P	P	3	W	R	C C C	B H	1937	120.809	
31	Cheesman Maserati	Henry Banks	Mas	V-8	2.930	3.375	182.8	Y	C C B	P	P.C.C.	1	Me	R	Ind	C B			
32	Hollywood Pay-Day Spl.	Harry McQuinn	AR	8	3.000	3.200	160.8	Y	C C B	P	P.C.C.	2	We	R	Ind	C B	1906	122.486	
33	Kennedy Tanks Spl.	Joie Chitwood	O	4	4.250	4.375	270.0	N	C C B	P	P.C.C.	2	W	R	Ind	C B	2030		
34	Refinoid Motor Oil Spl.	Al Putnam	O	4	4.312	4.625	270.0	N	C C B	P	P.C.C.	2	W	R	C C C	B H	1934	120.818	
35	Leader Card Spl.	Tony Willman	M-M	8	2.875	3.500	181.7	Y	C C B	P	P.C.C.	1	W	R	C C C	B H	1873	118.914	
36	Phillips Spl.	Overton Phillips	M	V-8	3.500	3.500	269.0	N	C C B	P	P.C.C.	4	M	R	C C C	B Hart	2052		
37	Greenfield Sales & Serv. Spl.	Ira Hall	Voelker	6	3.406	5.000	273.0	N	C C S	P	P.C.C.	3	W	R	C C C	Dy	1849		
38	W. & A. Spl.	Rene Le Begue	Mas	8	2.716	3.937	182.5	Y	C C S	P	P.C.C.	2	Me	R	Ind	C H	1980	118.981	
39	Bowes Seal Fast Spl.	Ralph Hepburn	O	4	3.687	4.250	181.5	Y	C C B	P	P.C.C.	1	W	R	C C C	B H	2000		
40	Shaffer 8 Spl.	Al Miller	Buick	8	4.322	4.625	271.0	N	B B	P	P.C.C.	2	W	F	C C C	B F	2002	123.860	
41	Alf -Romeo	Fred Winnai	A-R	8	3.250	3.875	257.0	N	C C S	P	P.C.C.	4	We	R	C C Co	D H	1763		
42	Walt Woetman Spl.	Floyd Davis	O	4	4.250	4.750	270.0	N	C C B	P	P.C.C.	2	W	R	C C C	F H	1856	120.228	
43	Lencki Spl.		Own	4	4.296	4.500	260.0	N		B	P	B	2	W	R	C C B	B H	1834	
44				4	4.296	4.500	260.0	N					2	W	R	C C B	B H	1839	120.797

ABBREVIATIONS:

Engine Make
Mas—Maserati
M—Miller
O—Offenhauser
S—Sparks
L—Lencki
B—Brisko
D—Duray
M-H—Miller-Hartz
Samp—Sampson
A-R—Alfa-Romeo
V—Voelker
M-M—Marchese-Miller

Supercharger

Y—Yes
N—No

Spark Plugs

C—Champion
Mas—Maserati
B—Bowes

Ignition

B—Bosch
S—Scintilla

Ignition Cable

P—Packard

Piston Rings

P.C.—Perfect Circle
B—Burd

Mas—Maserati

A.H.—American Hammered

Carburetor

Me—Memini
M—Miller
W—Wingfield
T—Timian
Z-Me—Zenite Memini
S—Stromberg

We—Weber

Z—Zenith

Drive

R—Rear
F—Front

Wheel Suspension

C—Conventional
Ind.—Independent
Co—Coil Spring

Starter

H—Hand crank
D—Delco
B—Bosch

F—Ford

Dy—Dyneto

Shock Absorbers

Mas—Maserati
H—Houdaille
G—Gabriel
Hart—Hartford
H-H—Hartford and Houdaille
F-H—Friction and Hydraulic
A-R—Alfa-Romeo
F—Friction

Brakes

H—Hydraulic
M—Mechanical
M-H—Mechanical, front, hand Hydraulic, rear, foot

Rear Axle Gears

DD—Double Diamond

Fuel

AG—Alcohol and Gasoline blend
A—Alcohol

G—Gulf

S—Shell
T—Texaco
C.F.—Crystal Flash
IGB—Imported Gasoline Blend

Oil

O—Oilzum
R.F.—McMillen
Ring Free

C—Castor

T—Texaco
R—Refinoid

How They Finished

Finish Position	Driver	Number of Car	Car	M.P.H.	Cause of Withdrawal	Number of Pit Stops	Withdrawn in Lap No.	Finish Position	Driver	Number of Car	Car	M.P.H.	Cause of Withdrawal	Number of Pit Stops	Withdrawn in Lap No.
1	Shaw	1	Boyle Special	114.277		2		14	Devore	14	Holabird Special		Running at finish	3	181
2	Mays	33	Bowes Seal Fast Special	113.742		1		41	Putnam	41	Refinoid Special		Running at finish	6	179
3	Rose	7	Elgin Piston Pin Special	113.572				68	Davis	68	Lencki Special		Running at finish	5	157
4	Horn	3	Boyle Special			2	199	35	Pettito	35	Indiana Fur Special		M. in bear's burned	2	128
5	Thorne	8	Thorne-Donnelly Special			1	197	21	Nalon	21	Marks Special		Broken conn. rod	2	120
6	Swanson	32	Sampson Special			2	195	17	Robson	17	Keller Special		Broken shock arm	1	67
7	Wearne	9	Boyle Special			2	195	24	Stapp	24	Surber Special		Brk. cl tankfiller	2	64
8	Hanson	31	Hartz Special			2	194	36	Williams	36	Quillen Bros. Special		Out of oil	1	51
9	Brisko	16	Elgin Piston Pin Special			2	193	10	Connor	10	Lencki Special		Broken fuel line	2	52
10	LeBegue	49	Lucy O'Reilly Shell Spl.			3	192	5	Bergere	5	Noc-Out Hose Clamp Sp.		Brk. oil gauge line	1	51
	McQuinn	41	Hollywood Pay-day Sp.		Running at finish	3	192	38	Russo	38	Elgin Piston Pin Special		Out of oil	2	43
	Andres	25	Belanger Foltz Special		Running at finish	2	192	54	Hepburn	54	Bowes Seal Fast Special		Univ. joint seized	1	41
	Hanks	28	Leon Duray Special		Running at finish	2	192	58	Miller	58	Alfa-Romeo		Spark plugs fouled	5	38
	Barringer	6	Hollywood Pay-day Sp.		Running at finish	1	191	19	Snowberger	19	Snowberger Special		Broken water pump	3	32
	Chitwood	42	Kennedy Tank Special		Running at finish	2	190	27	Hinnershitz	27	Marks Special		Broken clutch shaft	1	32
	Tomei	26	Falstaff Special		Running at finish	2	190	29	Riganti	29	Maserati		Skid and wrecked	2	24
	Miller	34	Alfa-Romeo		Running at finish	3	189								

* Instead of Cantlon



Keep 'Em Sold

WITH THE LINE THAT'S SELLING

● **Bank on it**—Toledo's the line you can rely on to give your customers the performance they expect — and keep them coming back for more. That's why more garagemen are installing Toledo parts on every repair job. And sales prove it! Ten straight years of sales gains is the Toledo record. Step ahead with this fast-selling, profit-making line. Demand Toledo on every parts order.

THE TOLEDO LINE IS COMPLETE

Valves and Valve Parts • Pistons: Aluminum, Cast Iron • Piston Pins: Chrome-Plated • Cylinder Sleeves • Cylinder Sleeve Assemblies • Engine Bearings • Water Pumps • Water Pump Parts • Tie Rod Ends • Chassis Bolts and Bushings • Shackles: Tryon, Silent "U" • Independent Front Wheel Suspension Parts

INSIST ON

TOLEDO

THE TOLEDO STEEL PRODUCTS COMPANY • TOLEDO, OHIO, U. S. A.

Warehouses: Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Indianapolis • Jacksonville • Kansas City • Memphis • Minneapolis • New York • Oklahoma City • Omaha • Philadelphia • Pittsburgh • Richmond • St. Louis • Wichita • Los Angeles • San Francisco • Portland • Seattle



1940

Toledo Sales to date
are 34.8 % Ahead
of 1939—the Biggest
Year in Toledo
History!

LEGALLY SPEAKING

by C. R. ROSENBERG, JR.

A lawyer's interpretation of Federal and local court decisions of interest to repairmen, presented each month

Must Pay for Refused Goods

WHAT happens when a seller of goods tries to deliver them in accordance with contract and the buyer refuses to receive them?

The seller has a choice of "reme-

dies" such as rescinding the contract or reselling the goods to someone else and suing the buyer for damages. In some circumstances, as a California court recently pointed out, he may sue the buyer for the full contract price,



Puritan say:

"Man who try to mix oil and water no can do."

Every brake system contains some moisture—through infiltration or condensation within the system. Castor oil type fluids can not *take up* this moisture; it finds its way to wheel cylinders where vital operating parts are located; mechanics know this results in corrosion and pitting of wheel cylinder parts.

But...

PURITAN

The Good Mixer

absorbs condensation—is completely miscible with brake fluids of *all* types—"approved" or otherwise.

Ask your N.A.P.A. salesman about this and other *exclusive* Puritan features.

Distributed Through



PURITAN COMPANY, INC.
ROCHESTER, NEW YORK

The Only Fluid
Engineered
Expressly for
REFILL Use!



even though the buyer continues to refuse delivery.

The Uniform Sales Act puts it this way:

"Where, under a contract to sell or a sale, the property in the goods has passed to the buyer, and the buyer wrongfully neglects or refuses to pay for the goods according to the terms of the contract or sale, the seller may maintain an action against him for the price of the goods."

Technically, the buyer may have legal title to and ownership of the goods although he may have refused delivery. Thus in a contract for goods to be manufactured or otherwise acquired by the seller in the future, the ownership in the goods passes to the buyer as soon as the seller has acquired them and set them aside for the purposes of the contract. That is what is meant by the "property in the goods passing to the buyer." Actually, they may never have left the seller's possession. This "passing of title" is tricky business. A repairman who has contracted to buy goods is safe in refusing them only after he has inspected them and found them to be defective or not in accordance with the contract specifications. Then he should notify the seller promptly.

Watching Dates

THE importance of noting the dates of transactions and important happenings in a business, was strikingly demonstrated in a recent lawsuit in the Federal courts. There in a contract for the sale of certain material it was stipulated that claims for imperfections would not be recognized by the seller unless made within 30 days after the receipt of the goods by the buyer.

A suit by the buyer for alleged defects in the goods was thrown out because, among other reasons, accurate dates were lacking.

"There is no allegation whatever," said the court, "that the claim for imperfections and deficiencies was made within 30 days after the receipt of the goods. The complaint does not allege when the goods were received or when the claim for imperfections was made."

Because these dates were not shown, the court ruled that the case was "demurrable." Demurrable is a fancy legal word for "no case."

A record of those dates might have meant a different outcome!

Account Not "Outlawed"

EVERY State has a statute of limitations fixing the time within which a creditor must sue on an unpaid account. If suit is not brought within the time specified in the statute, the account is said to be "outlawed" and cannot thereafter be collected by legal action.

But sometimes the statute of limitation (Continued on page 42)



Brings you this All-Metal Chair **FREE!**

FOR EARLY ARVIN HEATER ORDERS ON LATE FALL DATING

Order 8 of the new Arvin dash or underseat heaters and 4 defrosters from your jobber in June or July and get this smartly designed, comfortable chair for service station or home, FREE.

The heaters will sell fast because they're *hotter* than ever and *faster* on warm-up. And Arvin is backing you up with the most aggressive consumer advertising campaign in leading national magazines planned in many a year. In addition, you get a powerful and colorful array of heater sales helps . . . So order today and get your Arvin "extras."

Heaters and chairs delivered by August or sooner if desired. Your jobber gives you a late fall dating on the heaters. This special offer ends July 31. Limit—two chairs to a dealer.

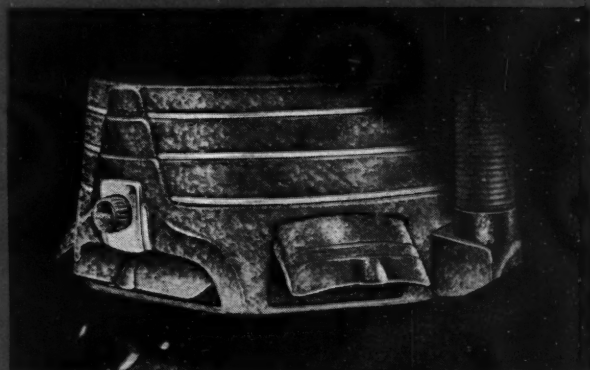


**NEW DASH AND
UNDERSEAT MODELS**

ARVIN

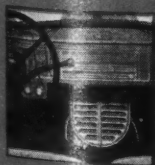
**HOT WATER
CAR HEATERS**

HOTTER
than ever!
FASTER
on warm up!



MODEL 72-G—one of three powerful dash models

UNDERSEAT HEATER MODEL 52-G
Fits 1939-40 Ford 85, Mercury, Lincoln Zephyr, Plymouth, Dodge, Chrysler, DeSoto, Chevrolet, Pontiac, Olds, Buick, Cadillac and LaSalle. Greater heat output than any heater we know of. Forces approximately 200 cu. ft. of air per minute equally to front and rear of car. This is bound to be a big seller and a money maker. List Price . . . **\$16.95**



Model 42-G Auxiliary Heater-Defroster for series installation with under-seat heater. List . . . **\$4.95**
Defroster fittings \$3.95 extra
For independent installation . . . **\$8.45**

● Model 72-G is the finest Arvin ever built. List prices range from \$14.95 with universal equipment for all cars, up to \$17.95 with special fast warm-up equipment for tailor-fit installation on Ford, Mercury, Chrysler-built and Chevrolet cars. Two other models, 62-G at \$12.95 and 52-G at \$9.95—are complete with universal fittings for all cars. All models have double-lock seam, cross-braced radiator cores. Copper water pipes carry no support strain. All dash models have double defroster outlets. Defroster fittings list at \$3.95 extra. The new Arvins have so many improved features—and Arvin-dealer profit building plans are so comprehensive—we can't begin to tell you about them here. See your Arvin jobber for full information.

NOBLITT-SPARKS INDUSTRIES, INCORPORATED, COLUMBUS, INDIANA

Plenty of Reasons



to order Arvins Now!

Legally Speaking

(Continued from page 40)

tions is said to be "tolled." That means that the time stops running under the statute because of some happening or circumstance. Thus if the time limit in a particular State is six years, something may happen to "toll" the statute for two years and in that event those two years are not counted in the six years.

One of the things that may toll the statute of limitations in many States is the absence of the debtor from the

State. For example, in a State where the law fixed a limit of six years for suing on accounts, a debtor might continue to live in the State for five years after contracting the debt, then move to another State. If after another five years, during which he was absent in another State, he moves back into the original State, he can still be sued on the old debt for another year. The five years he was out of the State do not count in the six years of the statute of limitation; the statute is said to be "tolled" for the five years he was out of the State.

This method of "tolling" the statute

of limitations is allowed by court decisions in many though not all States. Some States—Texas, for example—have statutes to the same effect.

As a Texas court recently explained:

"It has been repeatedly held that absence of a debtor from the State through business or pleasure will toll the statute of limitations during his absence on behalf of the creditor. To get the benefit of the statute of limitations the debtor must remain in the State for the full period of time described by law."

So, some of those "outlawed" accounts may not be barred by law at all. A little detective work may reveal that the debtor was out of the State during part of the time covered by the statute of limitations.

Collecting From Principal?

WHEN a business man supplies goods and service to Jones on a job that Jones is doing for Repairman Smith, can he collect for them from Smith?

Suppose Smith refuses to pay on the ground that Jones is not his agent but merely an independent contractor doing the job "on his own" for Smith. The burden is then on the business man to prove that Jones really was Smith's agent when the goods and service were supplied to him on the Smith job.

In a recent Kentucky case of the kind the business man proved by witnesses that the alleged agent had declared in the presence of the witnesses that he was actually the agent of the principal from whom the business man was trying to collect. However, the supposed principal had not been present when the alleged agent had made those statements and had not approved them at any time.

"The rule," said the Kentucky court, "is that the burden of proving agency is on the party alleging it, and that the declarations of an alleged agent made to third persons in the absence of the alleged principal, and not ratified by the principal, are not competent to prove agency."

The mere fact that a man says he represents somebody else in a deal is not enough to make that somebody liable on the deal. Best plan is to get the somebody—the principal who is expected to pay—to confirm or ratify the deal personally. That also gives the principal a chance to repudiate the agent, and the deal, if he sees fit.

Advertising Literally True, But—

MAY a repairman's advertising be literally true, yet deceptive and misleading?

Such was the question before a California court recently in a case involving the alleged violation of a statute forbidding "deceptive or misleading" advertising.

After quoting definitions of the

(Continued on page 67)

What Every Man Should Know About Bearings..



BEARINGS in the modern car take a lot of punishment in the form of excessive speeds and shock loads. They must keep moving parts in perfect alignment—under all stresses—yet give smooth quiet anti-friction performance.

For this reason, when bearings get worn or rough, they should immediately be replaced. That's the only way you can guarantee a satisfactory overhaul job.

Perfect bearings are worth, to your customer, a great deal more than he has to pay for them. Remind him of this, and remind yourself that your authorized Ahlberg Wholesaler can promptly supply you with every type and size of bearing you need.



Ahlberg Bearing Company

Manufacturers of CJB Master Ball Bearings
3025 WEST 47TH STREET — CHICAGO — 34 WAREHOUSE BRANCHES
Out West via PRECISION BEARINGS, INC. Los Angeles

Check and
You'll sure agree
the **WAGNER** line
includes everything
for complete
hydraulic brake
service

The brake service stations the public will patronize are those that can give quick as well as high-quality service. Wagner is constantly developing new brake service items to help you improve your service—new assortments of hydraulic brake parts—new hoses and gauges—new service accessories. A few of the many assortments and tools Wagner offers you are described herewith.



Only Lockheed No. 21 Fluid Has All These Advantages

1. Assure year round operating performance.
2. Function in sub-zero temperatures.
3. Apply lubricate the system over the operating range of temperature.
4. Maintain chemical characteristics after long use.
5. Maintain its high operating temperature characteristics.
6. Mix with other approved fluids.
7. Available everywhere through leading jobbers.

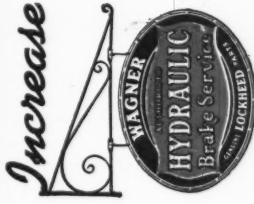
WIDE CHOICE OF ASSORTMENTS OF LOCKHEED PARTS

Name	Catalog No.
Buick	FL-13F
Cadillac and LaSalle	FL-14F
Chevrolet Passenger	FL-12E
Chevrolet Truck and Pass.	FL-19D
Chrysler and Plymouth	FL-5F
Dodge and Plymouth	FL-4F
Dodge Truck and Pass.	FL-3F
Federal Truck	FL-8E
Ford Passenger Car	FL-24A
Hudson and Terraplane	FL-14E
LaSalle and Cadillac	FL-16F
Oldsmobile	FL-10G
Overland	FL-25A
Plymouth and Chrysler	FL-5F
Pontiac	FL-11G
Studebaker Passenger	FL-15D
Terraplane and Hudson	FL-17E
The following General Assortments are necessary to service Small General Assortment to FL-9G—No. 1 (Through 1936)	
Small General Assortment to FL-9G—No. 2 (1937-38-39 additions)	
Utility Assortment... FL-20C	

There is an assortment of Wagner Lockheed parts to meet the requirements of YOUR business. You can start with the smaller General Assortment or one for a particular make of car. You can also be prepared to service all makes and models of cars with larger assortments furnished in 4 to 18 drawer cabinets. Parts can also be furnished individually through your Wagner jobber.



MASTER CYLINDER REFILLER
Fully automatic—fills master brake cylinder to proper level (no over-pump possible). Master cylinder cannot be pumped dry, nor can air enter system. Feeds the fluid just as required—stops and starts automatically. Uses no more brake fluid than needed. The smaller shops will find the Wagner self-leveling refiller indispensable when bleeding brakes. Completely eliminates any chance of pumping master cylinder dry while bleeding brake system.



Increase YOUR SALES WITH THESE ITEMS

Thousands of automobile repair shops have qualified to display this colorful 40" x 30" sign throughout the country—attesting that they are Wagner Hydraulic Brake Service Stations.

Call on your jobber for full information. He will tell you how YOU may qualify to become a Wagner Authorized Hydraulic Brake Service Station and cash in on new business.

It will pay you to investigate.

No. 21 AVAILABLE IN 3-OZ. SEALED CONTAINER

The 3-oz. can offers a great advantage over larger cans... this size serves as a one-shot refill. You sell the can to the car owner, punch a hole in the top, and pour the contents into the master cylinder until the fluid is up to the proper level.

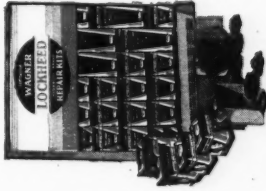
Every car owner will gladly buy one of these small cans if you explain to him the "safety factor" involved in not running short of fluid while away from home.

The 3-oz. size is attractively packaged in a merchandiser display carton as illustrated to the left. Place this display in plain view where your customers can see it and endeavor to sell each one a can.



WHEEL AND MASTER CYLINDER REPAIR KIT MERCHANDISER

This ready-for-use Repair Kit Merchandiser (FL-332) contains an assortment of 31 Master and Wheel Cylinder Repair Kits for servicing Ford, Chevrolet, Plymouth and many other cars. Ask for Catalog Sheet covering prices and full information.

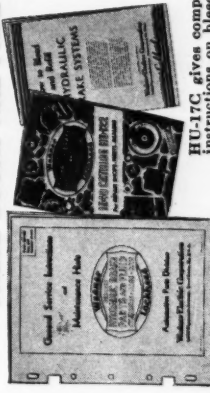


DECALCOMANIA

The motoring public will know that you handle Wagner Lockheed hydraulic brake fluid when they see this colorful 6" x 10" decalcomania (Form HU-29). Put it where your customers can see it when they stop or drive by. Can be put up in a few seconds.

Free on request

THESE BOOKS ARE FREE



HU-17C gives complete instructions on bleeding and refilling brake systems — a profitable service.

STOP-LITE SWITCH MERCHANDISER

This Wagner Lockheed Stop-Lite Switch Merchandiser (FL-334) will increase your profits—it brings to the attention of the motorist an important item that has been given little thought. Consists of 20 switches to service all popular makes of passenger cars, trucks, trailers, and buses. Your jobber will be glad to quote you prices.



OTHER ITEMS

The items shown in this ad are but a few of the many Wagner tools, assortments and trade helps. Send coupon for complete details.

Clip and Mail Coupon Today!

44-29
MA

AUTOMOTIVE PARTS DIVISION

Wagner Electric Corporation

6400 PLYMOUTH AVE.

ST. LOUIS, MO., U. S. A.

Gentlemen: Please send me data on No. 21 Fluid and 3-oz. can Merchandiser (). On assortments of parts Repair Kit Merchandiser (), Fluid-Bal and Refiller (), Stop-Lite Switch Merchandiser (), Send FREE Decalcomania (), FREE Books ().

FIRM NAME

ADDRESS

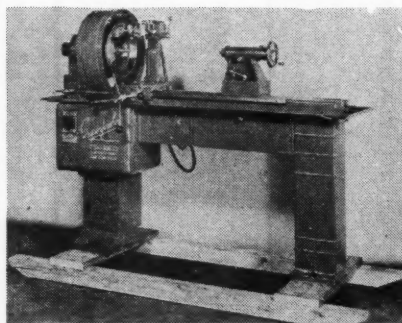
CITY

STATE

MY JOBBER IS

Superfinisher Available For Service Field

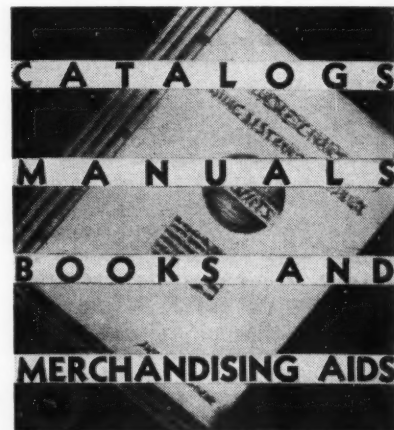
Superfinishing, that process developed by Chrysler for the finish of bearing surfaces, cylinders, brake drums, etc., has heretofore been available only on a production basis. Now, however, Ohio Units of Dayton, Ohio, under license agreement with Chrysler, has developed a universal superfinisher for round, flat, external and internal surfaces. Known as Ohio Units N-301, it is designed for general use in automotive and other shops for superfinishing crankshafts, brake drums, flat surfaces such as flywheels, discs and other parts.



The oscillating head which carries the superfinishing stones is mounted on a carriage which may be manually

traversed to permit the stones to come in contact with the full length of the work. The head is easily adjustable, and is driven by a flexible shaft from the main driving motor. A gear-type pump supplies a steady stream of lubricant to the work through a flexible tube connection.

The company also manufactures cam grinding equipment for production grinding of out-of-round shapes to precision limits.



To receive a copy of the free literature mentioned in some of the following items, just check the square on the postcard on page 66 which corresponds to the letter given the literature you desire.

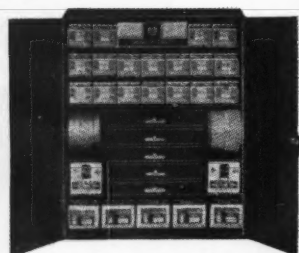
A new sales aid in the form of a booklet entitled "Surface Gold" by the Refinishes Division of E. I. du Pont de Nemours & Co., Room 7156 du Pont Building, Wilmington, Del., tells of means of bringing extra profits to the paint shop through effective selling methods. Check "A" on the post card for your copy.

The Service Division of Federal Mogul Corp., Detroit, Mich., has a new catalog giving a complete listing of bearing information for any make or model of car, truck, tractor or marine engine, and including a new item—brass brake shoe shims. In all, a total of 7565 items are listed in the catalog. A checkup in the "B" square will bring you your copy.

B. F. Goodrich Co., Akron, Ohio, has a new catalog section covering its line of Plastikon rubber putty used in sealing windshield glasses and similar services. The quality of this new putty and the various uses for which it is adaptable are explained in the booklet. Check "C" on the post card if you want a copy.

An analysis of lubrication problems and methods of meeting them effectively under high temperature conditions in a wide variety of specific applications is contained in a new technical bulletin (No. 130-D) just released by Acheson Colloids Corp., Port Huron, Mich. Check "D" on the post card.

A complete list of the flexible gasoline, oil, grease and vacuum lines used on all models of passenger cars is provided by a new, handy wall (Continued on page 49)



All P. & D. Assortments now stocked with the new Super Power Air Cooled Coils and Heavy Duty Condensers.

*Other P. & D. Assortments in Lock Type Cabinets of similar design include DA-21 at \$31.79, and DA-90 at \$103.62, (flasher sign supplied free with this model.)



There is a P. & D. assortment of Starting, Lighting, and Ignition parts to fit the needs of every shop.

With each assortment there is provided a Lock Type Steel Cabinet, a 3-color metal sign, a 3-color Decal for your window, a tune-up chart to speed up work, catalogs for ready reference, a binder to preserve them and further sales helps as issued.

You get all of these at the dealer cost of the parts only—the DA-40 illustrated above, is \$55.66.

Order a Cabinet from your jobber now and keep up with your tune-up business.

NEWTYPE WIRE, CABLE, TAPE and
NOKRODE BATTERY CABLE UNITS

P. & D. MANUFACTURING COMPANY, Inc.

STARTING LIGHTING IGNITION LONG ISLAND CITY
NEW YORK

REPLACEMENT PARTS

P. & D. Manufactures ONE complete quality line. Only the finest materials and workmanship obtainable are employed.

YOU CAN NOT PURCHASE ANY FINER QUALITY

leads in

PERFORMANCE
DEPENDABILITY
AND ECONOMY



● Outwardly compressors look somewhat alike, deep down under the skin there is a difference. U. S. Model M. K. 663 air compressor is the most popular size unit for service station operation and is the finest man, money and experience can build. Check these U. S. features with any compressor on the market before you buy. 1½ H. P. two stage type with cylinders 3⅝"—

1¾" x 3" having a maximum R. P. M. of 384. Totally enclosed Centrifugal unloader for protecting motors, 4 piston rings moving against a diamond bored wet-honed cylinder wall. Entire compressor constructed for heavy duty work.

Write for free catalog featuring the many U. S. points of superiority.

THE U. S. AIR COMPRESSOR COMPANY

Air Compressors

Cleveland, Ohio, U.S.A.

Hydraulic Lifts

Greasing Equipment



"They want to know about a re-bore job!"

American Trucks in Service Abroad

Allies Study Merits of Carburetors vs. Injectors

(By W. F. Bradley, Paris, France)

American trucks are now in service with the French army. The first to go into operation were Studebakers, followed by White, Dodge, and G.M.C. While practically standard models, equipment comprises external gas tank, closed driver's cab, rectangular radiator guard, a separate guard in front of each headlight, a platform

body with detachable canvas top and oversize dual tires. One of the G.M. shops in France is unboxing and assembling 5000 American motorcycles, most of them with sidecars.

The arrival of American trucks doubtless will relieve the civil transport situation, which is far from satisfactory. Since the end of August new vehicle registrations have been

very low, varying from 4000 to 6000 per month, compared with 12,000 to 18,000 a year ago. These official figures include both passenger cars and trucks. There are no stocks of used trucks and manufacturers and importers of new trucks of more than 3000-lb. load capacity are not allowed to sell to civilians without a special permit. High-powered used passenger cars are available, but sales are sluggish because of gasoline restrictions. Prices of small cars, both new and used, are soaring. Every week the army turns over a number of trucks for sale by auction, but nearly all of these are in need of more or less extensive repairs and skilled labor is difficult to obtain.

Railroads, which for a number of years have very successfully fought trucking interests, now refuse to carry freight for distances of less than 15 miles.

Injector vs. Carburetor

Numbers of German planes are fitted with gasoline injection in place of a carburetor. This has raised the cry in Allied circles that the injector must have advantages over the carburetor, or it would not be used by the German air force, and in certain circles it is maintained that the French and English ought to switch to injectors. There is every reason to believe that technical considerations did not dictate Germany's choice. Six years ago the Bosch Company of Stuttgart, made it known that it was



"SIGN HERE"

This sign reads: "BRAKES BALANCED. WE USE GREY-ROCK BALANCED BRAKSETS." But it says a whole lot more. It says: "Stop, Mr. Motorist. Here's the shop you've been reading about in SATEVEPOST, COLLIER'S, LIFE and TIME. Here's where you get quick, quiet, smooth, safe stops with Grey-Rock Balanced Brake Linings. Here's where—and only where—trained mechanics have the full Grey-Rock story and practice what they preach."

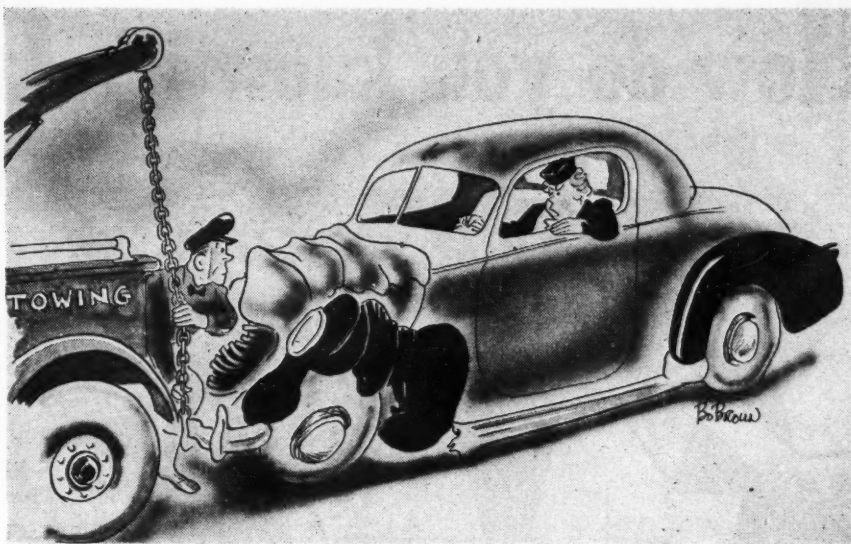
You should hang out this sign. You should sell Grey-Rock Balanced Braksets. You should enjoy the bigger, quicker profits that follow Grey-Rock's 1940 technical sales and service chart.

Grey-Rock

about to start carburetor manufacture. In reply to this the Solex Company, which practically dominates the French market and has important interests in Germany, announced that it would enter the injector field, which is almost entirely held by Bosch. The outcome was a signed agreement between Solex and Bosch, in which the former undertook not to manufacture injectors and the latter agreed to keep out of the carburetor field.

The German authorities, finding that they were dependent on foreign countries (Solex, French, and Stromberg, American) for their carburetor technique, instructed Bosch to push injector development for aero engines. After working on the problem for five years, injectors have been perfected, but, it is claimed, they offer no technical advantages over the carburetor and their servicing is much more difficult. The injector prevents freezing; but with the Hispano-Suiza-Solex device with the compressor blowing on the carburetor, this difficulty is effectively overcome. The main practical disadvantage of the injector is that it loads up the engine with gas when on a steep dive, causing spluttering when pulling out. French and English pilots have frequently claimed to have brought down German planes which were emitting black smoke, when that smoke was only caused by the injector pumping an excess of gasoline into the cylinders.

French carburetor experts deny that Germany has been forced to the use of low grade gasoline on airplane



"You're not scratching my bumper, are you?"

engines and at the time when production is all important they oppose any stampede to the injector merely because it is used by Germany.

Grey-Rock's Sales Set New High

Exceeding by a comfortable margin the same period's sales any year in their history, Grey-Rock set a new

high record for first quarter sales, according to Franklin A. Miller, replacement sales manager. This increased business coming on top of a 1939 all-time high is largely a reflection of increased individual jobber's sales, rather than expanded distribution.

A recent swing through five states by Mr. Miller confirmed the enthusiasm of Grey-Rock jobbers over the outlook for continued increases during 1940.

FOR GREATER PROFITS

"HOOT, MON!"

HOOT YOUR HORN!"

"Dinna be afeart, Jack. The brakes are lined with Grey-Rock." . . . Provident motorists, like the wise buyers for truck and bus fleets, turn naturally to Grey-Rock Balanced Brake Linings for quick, quiet, smooth, thrifty stops—for Grey-Rock performance is long-lived. Drive in where you see the Grey-Rock sign, as perfect a stop sign as you will find on the highways. Only the mechanics at those stations can show you the true import and economy of balanced brake linings for your car.

Give your car an even brake with Grey-Rock BALANCED BRAKE LININGS

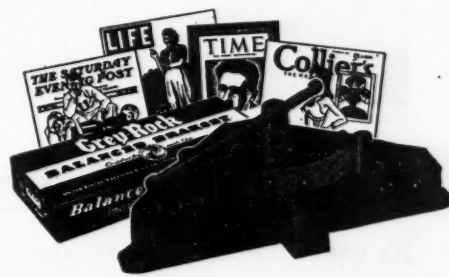
U. S. Asbestos Division of Raybestos-Manhattan, Inc., Manheim, Pa.

HARD PUSHERS

R MICE!"

OWER

These are current ads continuing Grey-Rock's season-long campaign in SATEVEPOST, COLLIER'S, LIFE, and TIME. Be a Grey-Rock dealer. Every national ad features your dealer sign, saying "This is the sign of a first-class service station." Get it up.



Use Balanced Braksets, world's finest replacements—and Kam-way the only shoe re-archer method—supported by regular ads to a 50,000,000 audience.

BALANCED BRAKSETS

UNITED STATES ASBESTOS DIVISION
of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FAN BELTS
HOSE • PACKINGS • RELINING EQUIPMENT

How do you know it's **GENUINE?**



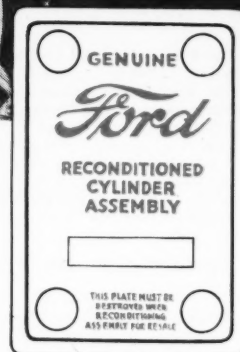
When you buy an exchange cylinder assembly, how do you know you've got the real thing—a Genuine FORD reconditioned assembly? And—how do you prove it to your customer?

These questions are often asked the Ford Motor Company. Well, the answer is now sure and simple . . .



LOOK FOR THE **GENUINE Ford** NAME PLATE

It's your guarantee to your customer that the exchange assembly has been reconditioned with the same equipment and precision as a NEW Ford engine. Worn parts have been replaced, where necessary, with new Genuine Ford Parts of the same quality as the original and the engine will perform like a new one—with the guarantee of the Ford Motor Company behind it!



Ford Motor Company • Service Department • Dearborn, Michigan

Merchandising Aids

(Continued from page 44)

chart which has just been announced by The Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago. The chart in size 8½ in. x 11 in., and will be sent upon request. Check "E" on the post card and return it to us.

The F. W. Stewart Mfg. Corp., Chicago, Ill., has just issued a 56-page book on Circle Ess fuel and vacuum pump repair parts for rebuilding and repairing fuel and vacuum pumps. Included is a complete arrangement of parts and specifications in a simplified form. A check in the "F" square on the post card will bring you your copy.

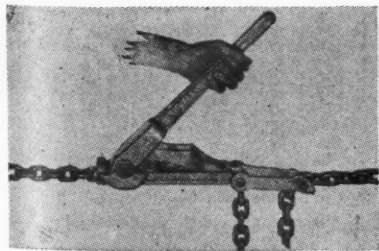
The biennial issue of the Victor Gasket Guide is now being distributed by the Victor Manufacturing & Gasket Co. The Victor Gasket Guide contains comprehensive information pertaining to the thousands of models of automobiles, trucks, tractors, buses, marine engines, motorcycles and industrial engines, large and small, that must be serviced. The next issue contains 400 pages of gasket listings with illustration. A new feature of this issue is a complete numerical list with a classification or popularity rating designed to help wholesalers in their stock control.

A new personality pushes to the fore in the field of automotive advertising and Pedrick Piston Rings are coming to be identified by a new character. The newcomer is a camel, that storied "ship of the desert" that travels "more miles on a single filling."

The camel is being featured in advertisements in leading automotive magazines. The series will be developed to keep pace with the evolution and improvement of Pedrick products. The character is being merchandised by Pedrick jobbers to dealer outlets throughout the country by direct mail and other promotional material, tying in the camel with the Pedrick Labor-and-Ring Guarantee Plan.

Come-Along

J. E. Shaffer Co., 621 E. Cameron St., Tulsa, Okla., has developed a hand power unit known as a "Come-



Along." It is designed for hand operation and is similar to a winch in operation except that the chain being pulled does not wind around a drum but passes through an opening in the unit. Come-Along can be used for any number of jobs requiring heavy pulling, such as pulling tree stumps, straightening fence posts, tightening hoops on a silo, etc. It can also be

used for straightening an automobile frame, pulling a car out of a ditch, moving heavy machinery, etc.

Added Feature With Radio Door Control

Barber-Colman Co., Rockford, Ill., manufacturer of door and gate operating equipment, has added a new feature to its radio control for operating garage doors and lights. It is a time delay button for installation on the dash which automatically maintains the circuit to the transmitter. With this equipment the driver merely pushes the button as he approaches

the receiving coil and it remains "on" for about ten seconds, leaving both hands free for driving. This is a distinct advantage, the company reports, especially in cases where the receiving coil is located in a "difficult to negotiate" part of the drive.

With the Barber-Colman radio control, the driver can unlock and open the garage door and turn on garage lights without even stopping the car. When leaving the garage the operation may be reversed. Each car can open only the door of the garage to which it is tuned (others cannot open your garage, and vice versa).

For complete details, write the manufacturer.

WINNERS!



McGILL Ball Bearings

with McGILL BRONZE land-riding retainers

... win sales through satisfaction

- You'll find McGill Precision Ball Bearings right up at the front for longer wear on all types of service—in automobiles—in trucks—in machinery. . . It's because of their ball retainers, made of special McGill Bronze. They offer the least resistance to steel balls—the least friction. The balls do not wear out-of-round or undersize before their time. McGill Bronze dissipates heat quickly, preventing crystallization and insuring cool running. Mechanics prefer them. Write for complete information.

McGILL MANUFACTURING COMPANY

1600 North Lafayette Street

VALPARAISO, INDIANA

Mechanical Specifications

These Specifications Are Brought Up-to-Date Each Month by the

Line Number	MAKE AND MODEL	Lowest Priced 4-D. Sed. (Divd.)	Wheelbase (In.)	Tire Size (In.)	ENGINE																	CHASSIS						
					No. of Cylinders, Bore and Stroke	Taxable H.p.	Piston Displacement (Cu. In.)	Maximum Brake H.P. at Specified R.P.M.	Compression Ratio (to 1.)	Displacement Factor %	Cylinder Head Material	Camshaft Drive Make	Piston Material	Oil Cleaner Make	Air Cleaner Make	Carburetor Make	Muffler Make	Electrical System Make	Battery Make	Clutch	Type and Make	Gearset Make	Universal Type and Make	Rear Axle Type and Make	Rear Axle Ratio	Front Spring Suspension		
1	Bantam.....65	.....	75	4.00/15	4-2.26x3.12	8.17	50.1	22-3800	7.40	....	CI	Own	Als	No	AC	Zen	McK	AL	AL	P.Ro	WG	m-UP	1/2 Spi	5.25	Tr	
2	Buick.....40-40	996	121	6.50/16	8-3 1/2 x 4 1/8	30.6	248.0	107-3400	6.10	37.0	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.L	Own	Mp-G-S	1/2 Own	4.40	IC			
3	Buick.....40-50	1109	121	6.50/16	8-3 1/2 x 4 1/8	30.6	248.0	107-3400	6.10	35.8	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.L	Own	Mp-G-S	1/2 Own	4.40	IC			
4	Buick.....40-60	1211	126	7.00/15	8-3 1/2 x 4 1/8	37.8	320.2	141-3600	6.25	39.8	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	1/2 Own	3.90	IC			
5	Buick.....40-70	1359	126	7.00/15	8-3 1/2 x 4 1/8	37.8	320.2	141-3600	6.25	38.8	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	1/2 Own	3.90	IC			
6	Buick.....40-80	1553	133	7.50/16	8-3 1/2 x 4 1/8	37.8	320.2	141-3600	6.25	36.3	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	1/2 Own	4.18	IC			
7	Buick.....40-90	1942	140	7.50/16	8-3 1/2 x 4 1/8	37.8	320.2	141-3600	6.25	37.6	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	1/2 Own	4.55	IC			
8	Cadillac-V8.....40-60S	2090	127	7.00/16	8-3 1/2 x 4 1/8	39.2	346.0	135-3400	6.25	40.1	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	3.92	IC			
9	Cadillac-V8.....40-62	1745	129	7.00/16	8-3 1/2 x 4 1/8	39.2	346.0	135-3400	6.25	40.5	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	3.92	IC			
10	Cadillac-V8.....40-72	2670	139	7.50/16	8-3 1/2 x 4 1/8	39.2	346.0	140-3400	6.70	38.0	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	4.31	IC			
11	Cadillac-V8.....40-75	2995	141	7.50/16	8-3 1/2 x 4 1/8	39.2	346.0	140-3400	6.70	38.6	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	4.58	IC			
12	Cadillac-16.....40-90	5140	141	7.50/16	16-3 1/2 x 4 1/8	67.6	431.0	185-3600	6.75	43.1	CI	Mor	Ala	AC	AC	Car	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	4.31	IC			
13	Chevrolet Master 85	740	113	6.00/16	6-3 1/2 x 3 3/4	29.4	216.5	85-3400	6.25	34.0	CI	Var	CI	No	AC	Car	Var	DR	Del	P.Own	Own	Nb-Own	1/2 Own	3.73	C			
14	Chevrolet DL & MDL	766	113	6.00/16	6-3 1/2 x 3 3/4	29.4	216.5	85-3400	6.25	36.7	CI	Var	CI	No	AC	Car	Var	DR	Del	P.Own	Own	Nb-Own	1/2 Own	4.11	IC			
15	Chrysler.....C-25	995	122 1/2	6.25/16	6-3 1/2 x 4 1/8	27.3	241.5	108-3600	6.50	36.6	CI°	Mor	Al	Pur	AC	Car	NS	AL	Wil	P.B&B	Own	Cb-UP	1/2 Own	3.90	IC			
16	Chrysler.....C-26	1180	128 1/2	7.00/15	8-3 1/2 x 4 1/8	33.8	323.5	135-3400	6.80	43.7	CI°	M-W	Al	Pur	AC	Str	NS	AL	Wil	P.D&B	Own	Cb-UP	1/2 Own	3.91	IC			
17	Chrysler.....C-27	.....	145 1/2	7.50/15	8-3 1/2 x 4 1/8	33.8	323.5	137-3400	6.80	39.9	Al	M-W	Al	Pur	AC	Str	NS	AL	Wil	P.B&B	Own	Cb-UP	1/2 Own	4.55	IC		
18	Crosley.....A	1362	80	4.25/12	2-3x2 1/4	7.2	38.9	15-4200	5.50	....	CI	For	CI	Pur	AC	Til	Rex	AL	AL	P.Ro	WG	St	1/2 Spi	5.14	C		
19	De Soto.....S-7	945	122 1/2	6.00/16	6-3 1/2 x 4 1/8	27.3	228.1	100-3600	6.50	37.6	CI°	Mor	Al	Pur	AC	Car	NS	AL	Wil	P.B&B	Own	Cb-UP	1/2 Own	4.10	IC			
20	Dodge.....D-14-17	855	119 1/2	6.00/16	6-3 1/2 x 4 1/8	25.3	217.8	87-3600	6.50	36.8	CI	Mor	Als	Pur	AC	Str	NS	AL	AL	P.B&B	Own	Nb-UP	1/2 Own	4.10	IC			
21	Ford V8-60.....1940	1685	112	5.50/16	8-2.6x3.2	21.6	136.0	60-3500	6.60	28.1	Al	Dia	CS	No	Yes	Own	Own	O	Own	P.Os	Own	m-Spi	3/4 Own	4.44	Tr			
22	Ford V8-85.....1940	1725	112	6.00/16	8-3 1/2 x 3 3/4	30.0	221.0	85-3800	6.15	36.2	CI	Dia	CS	No	Yes	Own	Own	O	Own	P.Os	Own	m-Spi	3/4 Own	3.78	Tr			
23	Graham, DeL. & Cus.	995	120	6.00/16	6-3 1/2 x 4 1/8	25.3	217.8	92-3800	6.65	....	CI	LB	Als	No	AC	Car	Old	DR	Wil	P.Long	WG	Nb-UP	1/2 Spi	4.27	C		
24	Graham, Sc & Cus. Sc	1130	120	6.25/16	6-3 1/2 x 4 1/8	25.3	217.8	120-4000	6.65	....	CI	LB	Als	No	AC	Car	Old	DR	Wil	P.Long	WG	Nb-UP	1/2 Spi	4.27	C		
25	Hudson Six & DeL. 6	763	113	(h)	6-3x4 1/8	21.6	175.0	92-4000	7.00	33.5	CI	Ge	Als	No	AC	Car	Old	AL	Nat	Pw.Own	Own	Nb-Spi	1/2 Own	4.55	IC			
26	Hudson Sup. & CC. 6	870	118-125	(i)	6-3x5	21.6	212.0	102-4000	6.50	35.4	CI	Ge	Als	No	AC	Car	Old	AL	Nat	Pw.Own	Own	Nb-Spi	1/2 Own	4.11	IC			
27	Hudson.....8 & CC. 8	952	118-125	(k)	8-3x4 1/2	28.8	254.0	128-4200	6.50	40.9	CI	Ge	Als	No	AC	Car	Old	AL	Nat	Pw.Own	Own	Nb-Spi	1/2 Own	4.11	IC			
28	La Salle.....40-50, 52	1320	123	7.00/16	8-3 1/2 x 4 1/8	36.4	322.0	130-3400	6.25	40.3	CI	Mor	Ala	No	AC	Car	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	3.92	IC			
29	Lincoln-V12.....	136-145	136-145	7.50/17	12-3 1/2 x 4 1/8	46.8	414.0	150-3400	6.38	38.5	Al	Mor	Al	Pur	AC	Str	Old	AL	O	P.Long	Own	m-Spi	FF Tim	4.58	C			
30	Lincoln-Zephyr.....1940	1400	125	7.00/16	12-2 1/2 x 3 3/4	39.6	292.0	120-3500	7.20	43.0	Al	Dia	CS	....	Own	Old	O	Own	P.Os	Own	m-Spi	1/2 Own	4.44	Tr			
31	Mercury.....1940	1960	116	6.00/16	8-3.187x3 1/2	32.5	239.0	95-3600	6.15	33.8	CI	Dia	CS	....	AC	Own	Own	O	Own	P.Os	Own	m-Spi	3/4 Own	3.54	Tr		
32	Nash-Lafay.....4010	875	117	6.00/16	6-3 1/2 x 4 1/8	27.3	234.8	99-3400	6.30	36.8	CI	Whit	Als	No	AC	Car	Wal	AL	USL	P.B&B	Own	Nb-Mec	1/2 Own	4.10	IC			
33	Nash.....Amb. 6, 4020	985	121	6.25/16	6-3 1/2 x 4 1/8	27.3	234.8	105-3400	6.00	35.4	CI	Whit	Als	BS	AC	Car	Wal	AL	USL	P.B&B	Own	Nb-Mec	1/2 Own	4.10	IC			
34	Nash.....Amb. 8, 4080	1195	125	7.00/15	8-3 1/2 x 4 1/8	31.2	260.8	115-3400	6.00	35.2	CI	Dia	Als	BS	AC	Car	Wal	AL	USL	P.B&B	Own	Nb-Mec	1/2 Own	4.10	C			
35	Oldsmobile.....60	899	116	6.00/16	6-3 1/2 x 4 1/8	28.4	229.7	95-3400	6.10	37.8	CI	Whit	Ala	No	AC	Car	Var	DR	Del	P.B&B	Own	Rb-Mec	1/2 Own	4.11	IC			
36	Oldsmobile.....70	963	120	6.50/16	6-3 1/2 x 4 1/8	28.4	229.7	95-3400	6.10	37.8	CI	Whit	Ala	No	AC	Car	Var	DR	Del	P.B&B	Own	Rb-Mec	1/2 Own	4.30	IC			
37	Oldsmobile.....90	1131	124	7.00/15	8-3 1/2 x 3 3/4	33.8	257.1	110-3600	6.20	37.2	CI	LB	Ala	No	AC	Car	Var	DR	Del	P.B&B	Own	Rb-Mec	1/2 Own	4.30	IC			
38	Packard.....110	975	122	6.25/16	6-3 1/2 x 4 1/8	29.4	245.0	100-3200	6.39	40.5	CI	Mor	Als	No	AC	Str	Wal	AL	PO	Ps.Long	Own	Rb-Mec	1/2 Own	4.11	IC			
39	Packard.....120	1146	127	6.50/16	8-3 1/2 x 4 1/8	33.8	282.0	120-3600	6.41	40.3	CI	Mor	Als	No	AC	Str	Wal	AL	Wil	Ps.Long	Own	Rb-Mec	1/2 Own	4.09	IC			
40	Packard.....160-80	1632	127-38-48	7.00/16	8-3 1/2 x 4 1/8	39.2	356.0	160-3500	6.45	43.8	CI	Mor	Als	....	AC	Str	Wal	AL	Wil	Ps.Long	Own	Rb-Mec	1/2 Own	(b)	IC		
41	Plymouth.....P9	740	117 1/2	5.50/16	6-3 1/2 x 4 1/8	23.4	201.3	84-3600	6.70	34.6	CI°	Mor	Al	Pur	Al	Car	NS	AL	AL	P.B&B	Own	Nb-UP	1/2 Own	3.90	IC			
42	Plymouth.....P10	805	117 1/2	6.00/16	6-3 1/2 x 4 1/8	23.4	201.3	84-3600	6.70	34.8	CI°	Mor	Al	Pur	Al	Car	NS	AL	AL	P.B&B	Own	Nb-UP	1/2 Own	4.10	IC			
43	Pontiac 6.....40-25	876	117	6.00/16	6-3 1/2 x 4	28.3	222.7	87-3520	6.50	38.2	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	1/2 Own	4.30	IC			
44	Pontiac 6.....40-26	932	120	6.00/16	6-3 1/2 x 4	28.3	222.7	87-3520	6.50	37.4	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	1/2 Own	4.30	IC			
45	Pontiac 8.....40-28	970	120	6.50/16	8-3 1/2 x 3 3/4	33.8	248.9	100-3700	6.50	39.8	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	1/2 Own	4.30	IC			
46	Pontiac 8.....40-29	1072	122	6.50/16	8-3 1/2 x 3 3/4	33.8	248.9	103-3700	6.50	38.0	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	1/2 Own	4.30	IC			
47	Studebaker Champ.	740	.....	5.50/16	6-3x3 3/4	21.6	164.3	78-4000	6.50	38.7	CI	Dia	Ly	No	AC	Car	Wal	AL	Wil	P.B&B	WG	Nb-Spi	1/2 Spi	4.56	IT		
48	Studebaker Com.10A	965	.....	6.25/16	6-3 1/2 x 4 1/8	26.3	226.0	90-3400	6.00	39.9	CI	Dia	Ly	Fram	AC	Str	.....	AL	Wil	P.B&B	WG	Nb-Spi	1/2 Spi	4.55	IT	
49	Studebaker Pres.6C	1095	.....	6.50/16	8-3 1/2 x 4 1/8	30.0	250.4	110-3600	6.00	40.9	CI	Dia	Ly	Fram	AC	Str	Old	DR	Wil	P.In	WG	Nb-Spi	1/2 Spi				

ABBREVIATIONS—General

°—Others also
 *—Measured on rim of Flywheel
 (1)—22 on Ford V8, 21 on DeL. Ford V8.
 1/2—Semi-floating
 3/4—Three-quarter floating
 †—With clearance of .015 the valve is .004 off its seat.
 ‡—Does not include Federal Taxes
 §—Computed on basis of displacement, gear ratio, effective tire diameter, and weight with normal load.

A—Above (rods removed from)
 A—After top center
 AA—Automatic adjuster
 Ad—Advanced
 Al—Aluminum
 Ala—Aluminum, Anode processed
 Als—Aluminum with struts
 Au—Automatic
 (b)—3.92—1803-6; 4.09—1804-7; 4.36—1805-8
 B—Below (rods removed from)
 B—Before top center
 (c)—1-1/2, 1-3/4 C—Conventional
 C—Cold (tappet clearance)
 Ch—Cross type with roller bearings
 Ch—Chain
 CNI—Chrome Nickel Iron
 CI—Cast Iron
 CS—Cast Steel
 (d)—1-1/2, 1-3/4
 (e)—0-1/2, 0
 (f)—1/2, 1/4-0
 F—Floating (piston pin)
 (g)—1-3/4, 1-1/2
 H—Hot (tappet clearance)
 (h)—Six-5.50/16, DeL. 6-6.00/16
 (i)—Super. 6.00/16, C.C. 6.25/16

Tune-Up Specifications

Car Manufacturers and Supersede All Others Previously Published

Service Brake Make and Type			Steering Gear Make and Type	Compression Pressure at Cranking Speed (Lbs.)	Spark Plug Make and Type	RINGS		Piston Pin Diameter	Piston Pin Lock In	VALVES						IGNITION						FRONT AXLE						Line Number																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
						No. and Width Comp.	No. and Width Oil			Head Diameter and Seat Angle			Operating Tappet Clearance	Intake Valve Opens Before or After T. C.		Breaker Points Gap (Ins.)	Spark Plug Gap (Ins.)	Spark Occurs °C	No. of Flyw. Teeth Spark Occurs TC	Breaker Housing	Rods Removed From	Crankpin Diameter (Ins.)	Crankpin Length (Ins.)	Capacity Crankcase (Qts.) Dry	Capacity Cooling System (Qts.)	Caster (Degrees)	Camber (Degrees)		Toe-In (Inches)	King Pin Inclination (Degrees)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
										Inlet (Ins.)	Inlet Seat Angle (Degrees)	Exhaust (Ins.)		Exhaust Seat Angle (Degrees)	Inlet																Exhaust	No. of Degrees	No. of Flywheel Teeth																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
OM R	135	Ch-H-10	2-3/8	1-1/8	11	R	1 1/8	45	1 1/8	45	.279	.011H	.012H	.011	19B022	.025	4BT	Au	A	1 1/4	1	3	5 1/2	15	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4

Motor Car Price, Weight and Body Table

Following are delivered prices at factory for cars with standard equipment and include all federal taxes with exception of Crosley, Ford, Lincoln, Lincoln-Zephyr, Mercury and Willys. Optional equipment, state or local taxes, transportation charges and finance charges are extra.

BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight				
BANTAM				CHEVROLET				DODGE				HUDSON (Continued)				NASH (Continued)				PACKARD (Continued)			
65				Master 85				Special D17				Country Club				Sedan, trk., 4d.				Model 1808			
Std. Coupe, 2p.				399	1255	Bus. Coupe				659	2865	Coupe, 2p.				755	2867	Tour. Limousine				2669	4585
Master Cou., 2p.				449	1275	Twn. Sed., 2d., 5p.				699	2915	Sedan, 2d., 5p.				815	2942	Tour. Sedan				2541	4510
Mast. Road., 2p.				449	1200	Sport Sed., 4d., 5p.				740	2930	Sedan, 4d., 5p.				855	2997	Rollson A. W.					
Pickup Truck				475	1280	Stat. Wag., 4d., 8p.				903	3105							Town Car				4575	4175
Panel Truck				489	1350	Master						De Luxe D14						*F.O.B. New York City					
Conv. Coupe, 2p.				525	1275	De Luxe						Coupe, 2p.				803	2905	Ambassador 8					
Conv. Sed., 4p., 2d.				549	1295	Bus. Cou., 2d., 2p.				684	2920	Coupe, 2-4p.				855	2973	Bus. Coupe				1135	3555
Stat. Wag., 4p., 2d.				575	1400	Coupe, 2d., 4p.				715	2925	Conv. Coupe, 5p.				1030	3190	Sedan, 2d.				1165	3620
						Twn. Sed., 2d., 5p.				725	2965	Sedan, 2d., 5p.				860	2990	A. P. Coupe				1170	3575
						Spt. Sed., 4d., 5p.				766	2990	Sedan, 4d., 5p.				905	3028	Sedan, 4d.				1195	3655
												Sedan, 4d., 7p.				1095	3460	Sedan, trk., 4d.				1195	3660
												Limousine, 7p.				1170		A. P. Cabriolet				1295	3640
BUICK						CHRYSLER						FORD						OLDSMOBILE					
Special 40-40						De Luxe						V8-60						Six-Series 60					
Bus. Coupe				895	3505	Bus. Cou., 2d., 2p.				720	2930	Bus. Coupe				620	2519	Bus. Coupe, 3p.				807	3030
Sport Coupe				950	3540	Coupe, 2d., 4p.				750	2945	Coupe				600	2669	Club Coupe, 3-6p.				848	3015
Tour. Sed., 2d., 5p.				955	3605	Twn. Sed., 2d., 5p.				761	2980	Tudor Sedan				640	2689	Sedan, 2d., 6p.				853	3065
Tour. Sed., 4d., 5p.				996	3660	Sport Sed., 4d., 5p.				802	3010	Fordor Sedan				685	2696	Conv. Cou., 3-6p.				899	3100
Conv. C., 2d., 5p.				1077	3665	Cabriolet, 2d., 4p.				873	2995							Conv. Cou., 3-6p.				996	3110
C. Phae., 4d., 5p.				1355	3755	Stat. Wag., 4d., 8p.				934	3160							Station Wagon					
Super 40-50												V8-85						Six-Series 70					
Sport Coupe				1058	3735	Royal Six						Bus. Coupe				660	2763	Bus. Coupe, 3p.				865	3100
Tou. Sed., 4d., 6p.				1109	3790	Coupe, 3p.				895	3075	Coupe				640	2783	Club Cou., 3-6p.				901	3105
						Coupe, 5p.				960	3110	Tudor Sedan				680	2909	Tour. Sed., 2d., 6p.				912	3170
						Vict. Sedan, 6p.				980	3150	Fordor Sedan				725	2936	Tour. Sed., 4d., 6p.				963	3220
						Sedan, 6p.				995	3175	Stat. Wag.				850		Conv. Cou., 3-6p.				1045	3240
						Limousine, 8p.				1235		De Luxe						Cust. 8 Cruiser					
										1310		V8-85						Club Cou., 3-6p.				1069	3440
						Windsor Six						Bus. Coupe				720	2831	Tour. Sed., 4d., 6p.				1131	3555
						Coupe, 3p.				935		Coupe				700	2791						
						Coupe, 5p.				995		Tudor Sedan				740	2964						
						Conv. Coupe, 5p.						Fordor Sedan				785	2966						
						Vict. Sedan, 6p.				995		Conv. Club Cou.				825	2956						
						Sedan, 6p.				1025	3210	Stat. Wag.				920	3262						
						Sedan, 8p.				1275													
						Limousine, 8p.				1350													
						Traveler-Eight						GRAHAM											
						Coupe, 3p.				1095	3475	De L. Special											
						Coupe, 5p.				1150	3525	Comb. C., 5p., 2d.				995							
						Vict. Sedan				1150		Sedan, 2d., 5p.				965							
						Sedan				1180	3590	Sedan, 4d., 5p.				995							
						New Yorker						Custom Spec.											
						Eight						Comb. Cou., 5p.				1130							
						Coupe, 3p.				1175		Sedan, 2d., 5p.				1100							
						Coupe, 5p.				1230		Sedan, 4d., 5p.				1130							
						Conv. Coupe, 5p.				1375													
						Vict. Sedan, 6p.				1230													
						Sedan, 6p.				1260	3635												
						Saratoga						De Luxe											
						Eight						Supercharger											
						Sedan, 6p.				1375		Comb. Cou., 5p.				1130							
												Sedan, 2d., 5p.				1100							
												Sedan, 4d., 5p.				1130							
						Crown Imp.						Custom											
						Sedan, 6p.				2245		Supercharger											
						Limousine				2445		Comb. Cou., 5p.				1265							
												Sedan, 2d., 5p.				1235							
												Sedan, 4d., 5p.				1265							
						CROSLY																	
						Conv. Coupe, 2p.				337	900	HUDSON											
						Station Wagon				362	933	Travel. Six-40											
												Coupe, 3p.				709	2800						
												Sedan, 2d., 6p.				735	2895						
												Vict. Coupe, 4p.				750	2830						
												Sedan, 4d., 6p.				763	2940						
						DE SOTO						De L. Six-40											
						De Luxe						Coupe, 3p.				745	2840						
						Bus. Coupe, 2p.				845	3001	Sedan, 2d., 6p.				775	2930						
						Coupe, 2-4p.				905	3026	Vict. Coupe, 4p.				791	2865						
						Tou. Sed., 2d., 5p.				905	3066	Sedan, 4d., 6p.				806	2965						
						Tou. Sed., 4d., 7p.				1175	3490	Conv. Coupe, 5p.				930	2860						
												Conv. Sed., 2d., 6p.				955	2920						
						Custom						Super Six-41											
						Coupe, 2p.				885	3024	Coupe, 3p.				809	2950						
						Coupe, 2-4p.				945	3044	Sedan, 2d., 6p.				839	3020						
						Conv. Coupe, 4p.				1093	3329	Vict. Coupe, 6p.				860	2980						
						Tou. Sed., 2d., 5p.				945	3084	Sedan, 4d., 6p.				870	3050						
						Tou. Sed., 4d., 9p.				985	3104	Conv. Coupe, 5p.				995	2980						
						Tou. Sed., 4d., 7p.				1215	3490	Conv. Sed., 2d., 6p.				1030	3020						
						Limousine, 7p.				1290													

STILL TIME TO WIN \$1000 CASH!

Make your ability
as a Brake Expert
pay you a Big Cash
Prize in this J-M
National Contest
to promote
Safe Driving —
Contest closes July 1
GET THE FACTS
NOW!



NEVER before have you been given such a red-hot opportunity to pick up extra cash as a Brake Expert!

You get it in the big 1940 J-M Lend-A-Hand Contest. You've got first money of \$1000 to shoot for . . . 71 other prizes that bring the total amount offered up to \$2000.

And it's all in real money! No merchandise credits . . . no premiums!

Check the simple rules . . . and you'll agree that this big J-M Contest is one of the easiest you ever saw. Every time you demonstrate "Brake Timing" . . . every time you reline or adjust a set of brakes . . . you're doing exactly the thing that helps you qualify for a cash prize.

And remember, while this big contest closes July 1st, there's still plenty of time to get in. Send for full details and your contest entry blank *right away*. Mail coupon *today*.



JOHNS-MANVILLE
The Oldest Name in Brake Lining

TO HELP YOU WIN... This handsome Speed Check Analyzer gives dramatic proof of the need for "split-second" brake adjustment. It talks car speeds in the "language of the courts" . . . feet per second, *not* miles per hour. The startling facts it gives customers are important helps in building up your sales and profits with J-M 4 Star Brake Lining. It's only one of the many J-M sales helps that make it easy to win a big cash prize in the J-M Lend-A-Hand Contest. Mail coupon for details.

NOTE THESE SIMPLE RULES Contest Closes July 1st, 1940

\$2000 in cash prizes will be awarded for the best letters on the following subject:
"How I have used the J-M 'Brake Timing' Plan to promote Highway Safety in my community and why I recommend J-M 4 Star Lining to my customers."

Judges' decision will be final. Ties will receive duplicate prizes.

YOU CAN WIN } **\$1000 FIRST PRIZE — \$500 SECOND PRIZE**
or one of 70 others. Total Prize Money: \$2000

J-M LENDS A HAND FOR 1940

Mail Coupon for Details



Johns-Manville, Dept. MA-6, 22 E. 40th St., N. Y., N. Y.
Send me full details on the J-M Lend-A-Hand Contest.

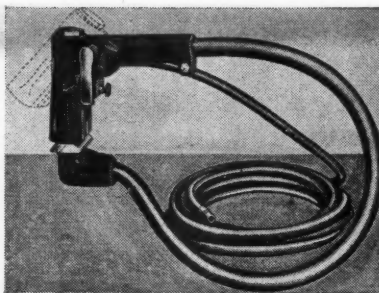
Name _____
Address _____
City _____ State _____

Key Ring Has Miniature License Tag

Le Roco, Inc., 236 W. 55th St., New York City, has developed a key ring to which is attached a short chain carrying a miniature license plate bearing the license number of your automobile. The license is carried in a metal case with an unbreakable transparent cover.

Elgin Air Hammer

The Borm Mfg. Co., Elgin, Ill., has announced a new air hammer for body and fender work. It is equipped with

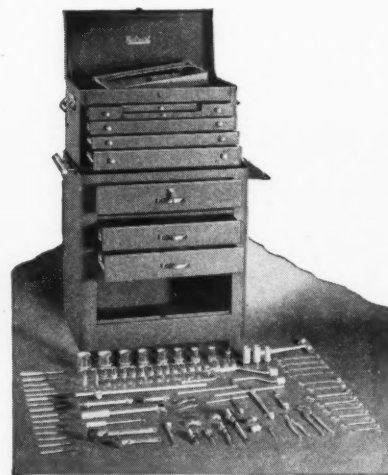


a swing head for easy application to the work. The six dies have been designed and shaped through actual body shop service to meet the widest

range of body and fender work. Special arms are available for varied uses. The hammer operates on less than 5 cu. ft. of air per min. at a pressure of from 90 to 100 lb. It strikes 4000 cushion blows per minute.

Workshop Cabinet

The Royal deluxe Rollway Workshop Model No. MC-105 complete with 101 approved tools has been introduced by The Herbrand Corp., Fremont, Ohio. The equipment consists of an all-steel tool chest mounted on



a steel workbench. Ten spill-proof drawers, divided to conveniently hold the complete tool equipment of the mechanic, other drawers which are felt-lined for precision instruments, a removable Tote Tray and other special features are incorporated in the Workshop. The chest and workbench have sliding front panels which disappear when open but which close up and lock when the Workshop is not in use.

Battery Pliers

A new combination battery plier, two tools in one, is announced by Belden Mfg. Co., 4689 W. Van Buren St., Chicago. Identified as Belden 7505, the new tool is drop-forged, chrome vanadium steel, triple plated with pol-



ished nose. The convenient angle of the jaws provides positive gripping of corroded or mutilated terminal nuts. The two handles have 5/8-in. and 9/16-in. box wrench openings for use on Nokrode type terminals.

Ring Specialist Kits

One of the most recent announcements to the replacement field is the Ring Specialist Kit by McQuay-Norris Mfg. Co., Cooper and Southwest Ave., St. Louis, Mo. This kit consists of a set of piston rings, connecting rod bearings and piston expanders. The Ring Specialist Kits are available for Ford and Plymouth cars, where the crankshafts have not been re-ground or refinished.

HERE'S THE COMPLETE Tyson Cageless STORY IN 10 WORDS

WESTERN UNION

CLARK OF SERVICE
This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

**TYSON HAS TWICE LIFE,
ONE-THIRD MORE CAPACITY,
MAXIMUM RIGIDITY=**

● To you this means—A tapered roller bearing line which enables you to offer your customers a plus value that builds both good business and good will.

Cageless FOR HARD SERVICE Cage-type FOR REGULAR SERVICE

Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

Put *Yourself* in this Picture!



Selling Chrysler and Plymouth is a Great Business! Maybe it is the Business for You!

Do you like mechanical things . . . enjoy meeting people . . . have a knack for selling? If your answer is "yes," it may be that a Chrysler dealership is the business for you.

Wherever You Live!

Building a profitable business of your own doesn't necessarily require "big-town" operations. Some of the outstanding successes among Chrysler dealers have been made from a small start in a small town. The demand for motor cars today is universal. People everywhere depend upon the motor car as a standard necessity in their daily lives.

A Market That Constantly Renews Itself!

With some 30,000,000 motor cars on the highways of America, the replacement market is not only enormous but constant. Each year the time arrives for millions of cars to be replaced . . . and experience shows that the motor car is

considered the most important possession in practically every American family. So demand is steady year after year . . . a market that constantly renews itself.

No Wonder Chrysler Dealers Are Loyal!

Chrysler has the reputation for having one of the most enthusiastic groups of dealers in the industry. There are several reasons for this: (1) Fine product . . . Chrysler's reputation for engineering leadership is worldwide. (2) Market coverage . . . with Chrysler and Plymouth, Chrysler dealers have a car in every price class. (3) Fine co-operation . . . Chrysler's interest in dealers' welfare and its valuable sales and other helps have won great dealer loyalty.

Selling Chrysler and Plym-

*All prices delivered in Detroit including Federal tax. Transportation, State and local taxes, if any, and special equipment extra.

outh is a great business . . . maybe it is the business for you. Your inquiry will bring full information. Address Chrysler Sales Division, 12200 East Jefferson Avenue, Detroit, Michigan.

COMPLETE MARKET COVERAGE

—Every Buyer is Your Prospect!



Plymouth Roadking . . . one of a line of great new Plymouths at \$645* and up.



Chrysler Royal Sedan . . . a great big quality car for only \$995.



Plymouth Commercial Cars . . . \$585 and up . . . chassis and cab \$555.



Chrysler Traveler . . . one of eleven Traveler, New Yorker and Saratoga types, \$1095 to \$1450.



Chrysler Royal Coupe . . . one of 13 Royal and Windsor models, from \$895 to \$1350.



Chrysler Crown Imperial . . . Chrysler's Finest, three luxury styles, \$2245 to \$2445.

THE WHOLE TRADE IS TALKING CHRYSLER!

Here's Help

For the Heir

A few years ago, a service-station operator in a small town remarked to me (a teacher) rather critically: "Looks to me like you fellows up at school ought to teach a few more practical things." He pointed out to his son Jim who was servicing a motorist. "Take Jim there; he'll go into business with me here when he's through school. Why can't he be studying something now that will fit in with the work he wants to do to make a living?"

I was silent for the simple reason

I didn't have an intelligent comeback. Plain as my big ears was the fact the average high school, depression-hit and faculty-thin, neglected training in the field of business management. And thousands of high-school folks working part time in business establishments, unable to supplement their apprenticeship with business training subjects. Something should be done about the situation, I thought helplessly.

Fortunately a little group of schoolmen at the Extension Division of the University of Nebraska saw the "hole in the fence" too, and got busy preparing some courses of high-school instruction in the business field which

local schools may obtain and offer (for high-school credit) by correspondence with the University of Nebraska Extension Division.

Among the training courses prepared by the Extension Division is a thoroughly practical one in Service Station Operation. Many schools make this course available to boys like Jim, whose father put me so completely on the spot. Today I shouldn't be so helpless in giving him a satisfactory reply and arranging that young Jim did get high-school training to fit the job he was doing. Your school superintendent can do the same thing for your son, too—if you want him to.

And should it be you, personally, or any of your employees that would like to study your job while you work, by all means make inquiry of the university of Nebraska Extension Division. You don't have to be a high-school student in order to take this training, nor will it prove expensive to you.—G. Edward Rotter, Lincoln, Neb.

YOU WOULDN'T USE 18 FISHING POLES TO CATCH ONE FISH!



THEN WHY USE 18 GEAR LUBES WHEN ONE DOES THE JOB?

● One gear lubricant—just one—takes the place of 18 now in use. It's Valvoline X-18, the all-season, all-purpose gear lubricant. X-18 opens the gate for more lube profits because it cuts your costs in three important ways:

1. It reduces your inventory—you buy one lube instead of 18.
2. It eliminates seasonal change-over stock losses—you simply make Spring and Fall changes from the same drum.
3. It saves time and labor because it requires fewer gun and drum changes.

Why not get *all* your lube profits? Send the coupon for more information or ask your jobber about Valvoline X-18.

VALVOLINE OIL COMPANY

Cincinnati, New York, Chicago, Los Angeles
Manufacturers of the First Pennsylvania Oil

Valvoline Oil Company, General Offices: 540 E. 5th Street, Cincinnati, Ohio.
Gentlemen: Without obligation I'd like the facts on "X-18."

Name.....
Address..... City..... State.....

VALVOLINE X-18

meets or exceeds manufacturers' specifications such as General Motors G.M. 4664M. Replaces winter and summer grades of Gear Oils, straight and heavy-duty, Passenger Car Hypoid, Truck-Duty Hypoid, Extreme Pressure, Worm and Steering Gear Lubricants.



Thermoid Floor Mats

A complete line of car floor mats is being offered to the replacement field by the Thermoid Co., Trenton, N. J. The line features deluxe taupe felt-backed mats which are designed to replace the standard equipment mat. A



black car mat, in addition to the taupe, is also offered with and without a felt back. Each mat is rolled and labeled with complete size and application information. Thermoid's merchandising program includes a new type metal display rack which can be used as a floor stand or hung on the wall. The rack is offered to retailers buying a special assortment of mats.

Warner-Patterson Appoints Ted Nagle

Announcement is made by Warner-Patterson Company, 920 S. Michigan Avenue, Chicago, Ill., of the appointment of the technical division of the Ted Nagle Equipment Corp., General Motors Building, Detroit, as exclusive national sales distributor for the Warner Portable Motor Analyzer.

Now in Full Swing!



The Biggest **SALES DRIVE** *in Oil Filter History* backed by **POWERFUL ADVERTISING**

If you want to get in on the greatest sales maker the oil filter business has ever seen, now's the time—and AC is delivering the goods!

All you do is sign up,—either special deal or contract,—with your AC wholesaler, as an official AC Oil Filter Service Station.

This campaign is a "natural!" The AC Line covers both market and pocketbook. Demand is established, and growing fast. Take advantage of this tremendous opportunity.

SIGN UP NOW

WITH YOUR AC WHOLESALER

Your material will be rushed direct from AC

AC OIL FILTER EQUIPMENT *(Standard or Optional)*

Buick, Cadillac V-16, Oldsmobile*, and Pontiac* motor cars; GMC Trucks; Greyhound and Flxible buses; Allis-Chalmers, Eagle, Graveley, and Ready Power tractors; Atlas Imperial and GM diesels; Continental and Gray Marine motors; Marion Shovels; Koehring road machinery; Brown and Sharpe machinery,—these are some of the vehicles, power plants, and machines on which AC Oil Filters are used for equipment.

**The Market for AC Oil Filters and Elements is
BIG — GROWING — AND PROFITABLE**

**Optional*

AC SPARK PLUG DIVISION • General Motors Corporation • FLINT, MICHIGAN

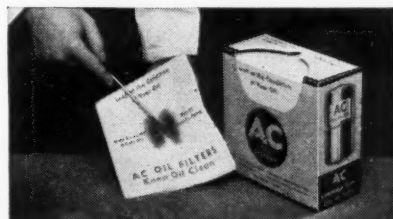
MOTOR AGE, June, 1940

When writing to advertisers please mention Motor Age

Here's What You Get -

Hard-Hitting, All-Year Advertising—

the biggest program in AC history, with a special full page Campaign ad for June. Saturday Evening Post, Collier's, Country Gentleman—with more than 20 million readers.



FREE "Oil Test Pads"—to start the sale

For wiping the dip stick. The dark smear plainly shows the need for a new element or filter.



FREE Window Advertising— Posters and stickers.



FREE Handout Folders —That sell the value and economy of filters.

FREE Identification Sign—
now a feature of AC national oil filter advertising.



FREE Installation Instruction Manual—

will be kept up to date for official AC Oil Filter Stations only.

New Lighting For Garages

Zeon Fluorescent tube lighting is a new form of industrial lighting that can be easily applied to offices, factories, garages, or any place where large areas need better light diffusion and increased foot candles. Similar to the well-known Neon Light, Zeon is a high voltage fluorescent light of the tube type. It differs from Neon, however, mainly in that the inside of the tube is coated with fluorescent powders of different colors and shades, filled with various gases. The Zeon tube has a light output five

times that of a Neon tube, the manufacturer states. Zeon, therefore, is used for illuminating purposes, whereas Neon is of use principally for producing illuminated signs. By varying the fluorescent materials used on the inside of the tubes, different colors can be obtained in Zeon lights, and color balance can be obtained by the use of two or more tubes.

First cost of Zeon is somewhat higher than incandescent lighting, but cost of electricity used to produce an equal amount of light is about 50 per cent less for Zeon than for incandescent lighting. The Zeon tubes operate for long periods of time—5000 hours is guaranteed—before replacement

of tubes is necessary. Replacement of Zeon tubes is not expensive—only the first cost installation of the complete fixture, which in each case is an individual engineering job, is higher than for incandescent type of lighting. For complete information write Federal Electric Co., Inc., Chicago, Ill.

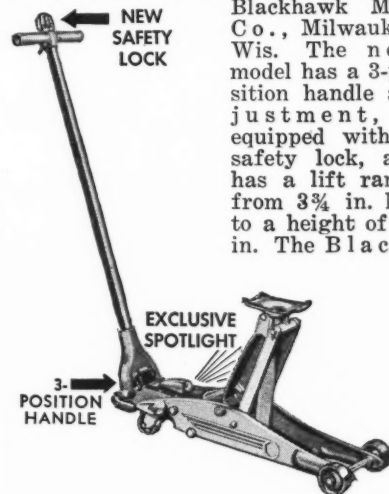
C & B to Market Ring-True Bearings

Clawson & Bals, Inc., Chicago, has completed negotiations with Bohn Aluminum and Brass Corp. whereby C&B will market Ring-True bearings. The Bohn bearings are now being supplied to Ford, Chrysler, General Motors, Caterpillar, Waukesha, Hall-Scott, Hercules, Hudson, Packard, White, Nash, Cummins Diesel, Studebaker and other companies.

Clawson & Bals will soon make available to the automotive trade a new type heavy-duty bearing, manufactured by Bohn Aluminum and Brass Corp., now being used for aircraft engines.

Blackhawk Has New Jack

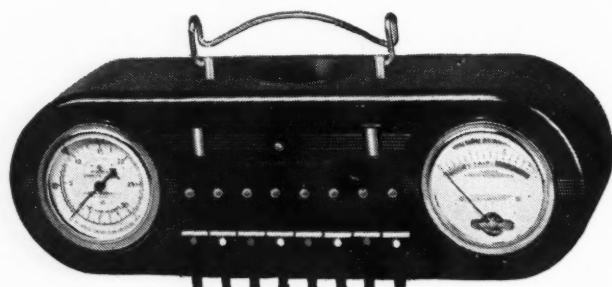
A new 2-ton service jack, Model S-18, has just been introduced by the Blackhawk Mfg. Co., Milwaukee, Wis. The new model has a 3-position handle adjustment, is equipped with a safety lock, and has a lift range from 3 1/4 in. low to a height of 20 in. The Black-



hawk built-in flashlight feature is incorporated in the new model, also. List price \$39.50.



"No Lady—what I said was that you wouldn't have to bother with OIL for a thousand miles!"

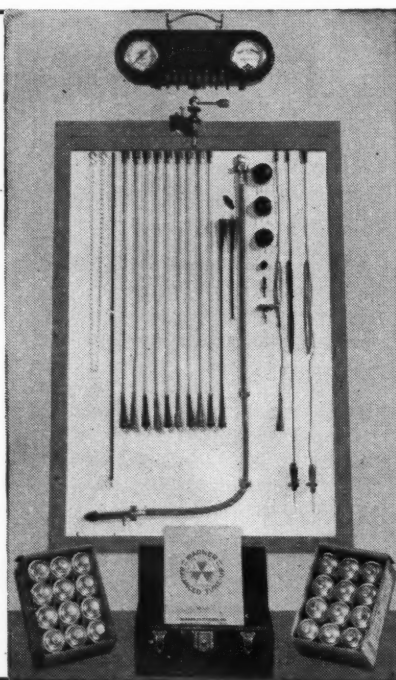


WARNER PORTABLE MOTOR ANALYZER—includes: 1) Cylinder Control Switches; 2) Triplex Gauge; 3) Dual Range Voltmeter; 4) Coil Calorimeter; 5) Primary Circuit Indicator; 6) Secondary Circuit Indicator; 7) Spark Plug Indicator; 8) Warner Motor Life Injector

Complete! PLUS— Compression Tune-up Service

You get ALL these Accessories with the WARNER Portable

- Voltmeter Leads
- Vacuum Tube
- High-tension Cables
- Low-tension Cables
- Compression Hose
- Supporting Bracket (with ball and socket joint, to lock instrument into desired position)
- Chain and Hooks (to support instrument in hanging positions)
- Fuel Pump Sediment Bowl Cups (for restricted fuel line test)
- Compression Fittings
- Intake Manifold or Carburetor Fittings (for vacuum or fuel pump pressure test)
- Carburetor Attachment Clip (for WARNER MOTOR LIFE SERVICE)
- Complete, Simplified Instructions
- "Warner Balanced Tune-up," complete tune-up and service manual, fully illustrated in color
- 2 cases, Warner Motor Life—to give Compression Tune-up to 12 cars
- (Price per car, \$1.50; your PROFIT per car, \$1)
- Locking, Steel Tool Box for Analyzer Accessories



Key your testing, service and tune-up profits to the Warner Portable Motor Analyzer! See how it will let you do a faster, more accurate job of motor testing—PLUS Warner Motor Life Service for Compression Tune-up! Complete, with ALL accessories and supplies, shown above **\$89.50**

WARNER-PATTERSON CO.

Makers of Warner Liquid Solder • Warner Radiator Cleaner • Warner Cooling System Protector • Warner Motor Life

920 S. MICHIGAN AVE., CHICAGO, ILL.

Sold through Technical Sales Division of
TED NAGLE EQUIPMENT CORP.
Room 7-272 General Motors Bldg., Detroit, Mich.

MORE CUSTOMERS... MORE PROFITS...

IF...

"THEM that has, gets" is a shrewd, if ungrammatical, old saying.

The shop that is well equipped to do business, will generally have plenty of business to do.

For one thing, it can ordinarily do the work quicker and better. And for another, people *do* judge by appearances. They like the look of success.



CAN THIS HELP YOU? WHY NOT TRY?

Frankly, we have something to sell, but that shouldn't stop you from investigating.

It boils down to this. If you think your shop equipment needs any renovating or any expansion, we offer you a way to do it without planking down a lot of money. In

fact, thousands of our clients have found our plan lets the new equipment pay for itself.



INSURANCE
INCLUDED

It's the AEP way of buying... through your jobber... with a small down payment before installation... and a simple, low-cost time plan to see you through to the finish.

Perhaps it's all you need to put you on the way to bigger, better business. Why not find out? MAIL THE COUPON.

COMMERCIAL CREDIT COMPANY

Commercial Bankers

WHAT NEW EQUIPMENT WOULD BRING YOU THE BIGGEST RETURNS?

MAIL
THE
COUPON
NOW!

Let us tell you how to get it through AEP—small initial outlay—monthly liquidation—ample time—low cost—fully insured—one contract.

COMMERCIAL CREDIT COMPANY, Baltimore, Md.

Send me full details. What local jobbers offer AEP terms?

Name _____

Address, City & State _____

Shaw Wins

(Continued from page 16)

of the starters being blown jobs. This was due to there being more foreign entries, all of which were supercharged. Only one of the four-cylinder cars, Leon Duray's car number 28, had a blower. It used a Roots type mounted at the front of the engine and driven by spiral bevel gears from the crankshaft. Both of the American-made 8-cylinder cars used a supercharger, and the 16-cylinder Sampson Special driven by Bob Swanson used two blowers of the centrifugal type.

During the race the supercharged jobs showed their superior accelerating ability by repeatedly passing the others as they came out of the turns and headed down the straightaways. In the final analysis we find five supercharged jobs finished among the first 10.

In so far as mechanical features are concerned, there was nothing of outstanding interest new this year on the American cars. Chassis design remained the same as in past years; wheel suspensions followed the conventional practice common with American cars which have never gone in for independent wheel suspension—either quarter, semi-elliptic or trans-

verse springing in front, with either semi-elliptic or transverse springing on the rear; clutches and brakes were the same as in past years. The only change, if it can be classified as such, is a trend toward the use of the hand brake only, doing away entirely with the foot brake. This feature was explained as due to the fact that the driver believed he had a better "feel" of the braking effort applied with his hand than with his foot. Several of the cars had no foot brake at all, depending entirely on the hand brake, which was usually hydraulic in operation.

Carburetion followed the usual practice, with the up-draft and down-draft types being about equally divided. The only exception to this general rule was the car driven by Joe Thorne, which had six carburetors one for each cylinder. Each carburetor was mounted with a separate intake to the cylinder.

The outstanding car of American manufacture from the point of interest in comparison with the conventional jobs was the Sampson Special driven by Bob Swanson. This car in its present form made its first appearance at the Indianapolis track last year, but was forced out early in the race because of differential trouble. This year it finished in sixth place.

The engine is a 16-cylinder job consisting of two parallel 8-cylinder blocks mounted at a slight "V" on a single crankcase. The engine uses two crankshafts which are synchronized at the rear of the engine by master gear. Two centrifugal type chargers are mounted at the rear, and blow the mixture into a common intake manifold located in the center between the two blocks. The flywheel is attached to the master gear, and the drive shaft extends from the clutch to an indirect-drive transmission combined as a unit with the differential, and mounted at the rear.

Quarter elliptic springs and a conventional axle are used in front, with torsion bar suspension in the rear. The front axle is mounted above the front arms of the frame, and the rear tube which takes the place of the conventional rear axle housing is also above the frame. The rear suspension is a modified DeDion type. The rear cross tube is fitted with a ball stud in the center, which rides in a vertical slot in the rear of the differential housing. This is to allow for up-and-down movement of the rear wheels and to maintain the rear wheels laterally in line with the front. Drive is through two short axle shafts fitted with universal joints at the wheel ends and at the inner ends where they emerge from the differential.

The keenest interest, both from the spectators' angle and from the viewpoint of technical men, was evidenced in the Maserati cars driven by Shaw, Riganti and LeBegue. To the spectator, the entry of foreign make cars adds the spice of international competition to the contest, and there was general disappointment when the car qualified by Rene Dreyfus was forced out of the starting line-up because he did not qualify it fast enough. The spectator understands that these for-

(Continued on page 64)

"Graf-Flox" STARTS SOMETHING



CUTS Friction TO A Ffraction

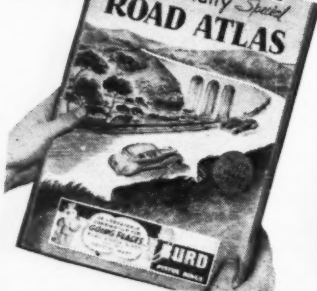
No tugging at a crank . . . no towing to get started . . . no tedious idling to limber up. Just step on the starter. Graf-Flox treated rings are self-lubricating before, during, and after their quick self-seating.

Graf-Flox is not a mere surface treatment or finish, but a part of the metal itself, extending clear through the wearing zone. Graf-Flox treated metal contains graphite—the one lubricant that can't be squeezed out, washed out, burned out, nor even dissolved out with chemicals. Graf-Flox guards against scuffing, scoring, and seizing . . . reduces the rate of wear of cylinders and pistons as well as of the rings themselves. Graf-Flox cuts ring

friction to a fraction, saves fuel, adds pep and power . . . not only when rings are new, but all through their extra-long life.

There are Graf-Flox treated rings for every position on the piston, for every degree of cylinder wear and distortion . . . all the advantages of Burd design and precision, plus this new triumph over friction and wear. Write today for full particulars on the Graf-Flox profit opportunity.

Get Your Copy



This 112-page 1940 Rand McNally Road Atlas FREE for three box labels from Burd "Hi-Speed" or "Super Hi-Speed" combination sets—plus ten cents for postage.



BURD PISTON RING CO.

ROCKFORD, ILLINOIS

(Associate Co., Liberty Foundries Co.)

BURD
"Graf-Flox"
PISTON RINGS

Getting Salesmen's Co-operation

Tying in Advertising with Selling

Getting out into the field

Copy Testing

DIRECT MAIL

Layout, Copy and Illustration

Market Information

contributing to the solution
of general company problems

Readership of Publications

Measuring Results

WHAT'S YOUR PROBLEM?

Your business . . . in at least one respect . . . is no different from others: *Your marketing problems are constantly changing.* You must ever be on the search for new ideas . . . for new ways to get results.

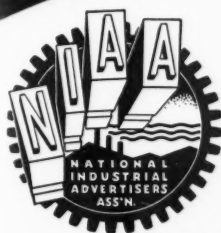
No doubt several of your immediate problems are indicated here . . . all of those shown will be threshed out at the 18th Annual Conference and Exposition of the National Industrial Advertisers Association, at the Hotel Statler, Detroit, September 18, 19, 20.

Plan now to get the up-to-the-minute facts on the latest ways to do a better industrial marketing and advertising job.

*All Industrial Marketing Executives
are invited to this Conference*

ALLOCATION OF BUDGETS

Programs that management
will approve



1940 INDUSTRIAL ADVERTISING CONFERENCE

DETROIT . . . HOTEL STATLER . . . SEPTEMBER 18, 19, 20

Vat Dyes May Improve Automotive Finishes

Tests indicating the possible application of vat dyes in automotive finishes were reported before the American Chemical Society by Crayton K. Black, Du Pont Co. chemist at the Cincinnati meeting of the organization held last month.

"The need for colors of greater light resistance has been intensified by advent of the so-called metallic finishes," Dr. Black stated. "In this type, aluminum powder replaces a portion of the pigment so that a tinting effect is obtained. Many colors with adequate light fastness in full shades do not

retain them under these conditions. Automobile stylists have been greatly handicapped because of inability to secure light-fast shades of the desired hue."

Dr. Black cited a number of tests which he said indicated possibilities in the use of vat dyes to fill these requirements. A vat blue was ground into a nitrocellulose lacquer and painted on automobile body steel panels. Comparisons after 10 months' exposure in Florida showed "very little" change, while other blues either turned green or faded completely.

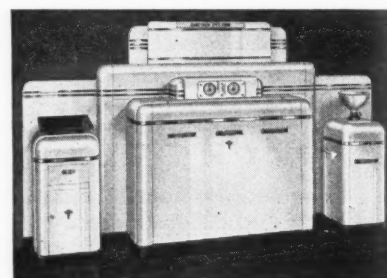
Another set of panels contrasting a "thioindigo" dye with the azo maroon pigments in use was displayed. In this instance a metallic finish was used,

and exposed for 12 months. The thioindigo dye was shown to have experienced far less color change than other maroons, and exhibited no bronzing under buffing, an important property of a maroon.

"Despite a relatively high pigment cost," Dr. Black concluded, "vat dyes may prove an economical solution, particularly in the case of pale tints where only a small quantity of vat color is required."

Lubrication Equipment

Arranging lubricating equipment in an attractive unit forming a battery that adds eye appeal to your lubrication department is possible with the new Lincoln Standard Wall Batteries. Available in two basic models, they are the latest additions to the complete line of modern lubricating equipment manufactured by the Lincoln Engineering Co., 5701 Natural Bridge Ave., St. Louis, Mo. All pumping units, original 100-lb. drums and pipe

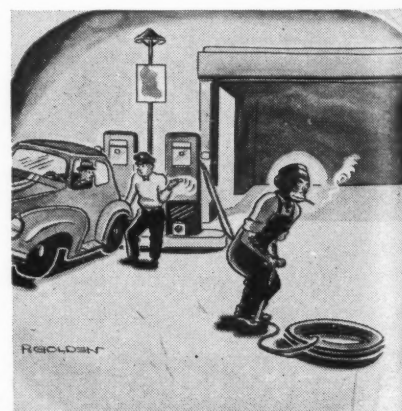


connections are fully concealed within the cabinet. Of the two models available, one provides for dispensing one chassis and two gear lubricants, and the other provides for one chassis and one gear lubricant. Both models are alike in outward appearance and dimensions, and are supplied with or without gear lubricant meters.

CSRA June Schedule

Five automobile races sanctioned in June by the Central States Racing Association will be operated in Ohio and Indiana. They are:

June 2—Dayton (Ohio) Speedway; June 9—Fort Wayne (Ind.) Speedway; June 16—Greenville (Ohio) Speedway; June 23—Jungle Park, Rockville, Ind.; June 30—Winchester (Ind.) Speedway.



"He's been a grease monkey so long . . . !"

More profit on repair jobs!



Cleaning motor block with Hypressure Jenny—easy, inexpensive to operate, and portable.

Typical engine block partly cleaned. Note thoroughness of job! Time per motor, 10 to 15 minutes.

HYPRESSURE JENNY STEAM CLEANING SAVES 25% TO 40% OF YOUR MECHANICS' TIME!

Get your full profit out of every repair job by steam cleaning first with Hypressure Jenny! Saves up to 40% of your mechanics' time by eliminating the grease and dirt that slow down repairs. Create new sources of revenue by selling motor and chassis cleaning service along with tube jobs and washes. A motor cleaning

job with Hypressure Jenny takes only 10 to 15 minutes . . . can be sold for \$1.50! In addition, clean floors, pits, runways, tools, windows, etc., at lowest possible cost. Mail the coupon below and find out how much extra profit Hypressure Jenny can bring you. No obligation!

HOMESTEAD VALVE MFG. CO.
P. O. BOX 95 CORAOPOLIS, PA.

SEND FOR THIS
FREE SURVEY
TODAY!

O. K.—Send that Survey.

We recondition, repaint, repair.....cars or trucks monthly.

We employ.....mechanics on dirty, greasy repair work.

NAME.....

ADDRESS.....

SURVEY

Guardians of the Vital Zones

THE FEL-PRO LINE



FEL-PRO CYLINDER HEAD AND MANIFOLD GASKETS

Made in two types, copper-asbestos Sealmaster and Black Face. Conform to warped and irregular surfaces without distortion. Superior guard for the VITAL ZONES of cylinder head and manifold.



FEL-PRO GASKETS
FEL-PRO Gaskets furnish better, more permanent protection to the VITAL ZONES wherever gaskets are used. A complete line for all models of all cars.



FEL-PRO PUMP PACKING
The VITAL ZONE of pumps on all models of all cars is completely protected by FEL-PRO Pump Packing. A complete line of metallic packing, die-molded universal rings and molded sets for individual cars.



FEL-PRO GREASE RETAINERS
Furnish more complete protection of the VITAL ZONES where constant grease supply is necessary. Easily installed... absolutely accurate on all models of all cars.

Rapid advances in automotive engineering today make it more important than ever before for you to use gaskets, pump packing and grease retainers built to keep pace with finer, higher speed motor and car operating requirements.

You can win customer good-will, attract an increasing volume of service work and be sure every job is right by installing FEL-PRO gaskets, pump packing and grease retainers.

Remember, the FEL-PRO line, specifically engineered to completely protect the VITAL ZONES, has won the approval of the entire automotive industry!

Write Now For Your Copy of Big New Gasket Catalog!

FELT PRODUCTS MFG. CO. • 1510 WEST CARROLL AVENUE • CHICAGO, ILLINOIS

The Name Protects You!

W-376
7 cu. ft.

BUYING a Wayne Compressor — direct from the factory — is your best guarantee of long and satisfactory air service. Each compressor is given a scientific laboratory test to assure highest efficiency before shipment. You can easily keep it at that high pitch of economical performance because Wayne's nation-wide direct factory service organization is at your call wherever you are.

Waynes cost no more than others — so why not be sure? Wayne's responsibility and reputation are behind every product we sell. Write today for illustrated bulletin that tells why Wayne offers greatest value.

THE WAYNE PUMP COMPANY
Dept. MA-640 . . Fort Wayne, Indiana

AND EVERY UNIT TESTED!

MORE AIR AT LOWER COST WITH WAYNE AIR COMPRESSORS

Shaw Wins

(Continued from page 60)

eign cars are fast—faster than any one of our make with the possible exception of the Bowes Seal fast entry driven this year by Rex Mays. The fact that these two Maserati jobs driven by French drivers made such a relatively poor showing during the qualifying trials was due entirely to the fact that the drivers were not accustomed to the track.

In addition to the handicap of driving on an unfamiliar course, the Frenchmen had another streak of hard luck. After both cars had com-

pleted their qualifying runs, Dreyfus took LeBegue's car out on the track for practice to try to improve his skill on the turns. After making a few laps at an average of better than 123 m.p.h. (the car qualified at 118 m.p.h.), a connecting rod broke just above the crankshaft bearing end and knocked a hole in both sides of the crankcase. Within an hour after this accident happened, car No. 22 which had been qualified by Dreyfus, was forced out of the line-up by faster qualifying cars. This appeared to put both the French entries out of the race, but when the qualifying trials were all over and LeBegue's car was still in the line-up, the boys got busy

and switched motors. LeBegue's car No. 49 entered the race with the engine taken from Dreyfus' car No. 22. This exchange was possible because both engines and chassis were exactly alike.

These cars were of the same model as that driven by Shaw, and are identified as Type 8CTF. The engine is a straight 8, overhead camshafts, and is blown by two Roots superchargers drawing from two dual Memini carburetors. Shaw's car used alcohol fuel, while the LeBegue entry used the regular French racing fuel which is a blend of gasoline, methanol and benzol.

The Maserati driven by Riganti is a newer model and has a slightly larger bore and a shorter stroke, and uses four valves per cylinder. In general it follows the general pattern of the other Maseratis, although differing slightly in details. Like Shaw, Riganti used an alcohol blended fuel. This car was badly wrecked during the race, but it is expected that the car will be repaired, and it already has a sponsor for next year's race.

New Bumper-Lift Jack

The new Model "1.30" bumper-lift hydraulic jack with pump at the top is the latest addition to the complete line manufactured by Hein-Werner Motor Parts Corp., Waukesha, Wis. It is intended for any 1940 model pas-



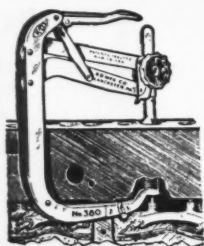
senger car, as well as many earlier models. This jack operates above the bumper, making it easy to operate. A universal hook fits securely under the bumper. Capacity, 3000 lbs. List price \$4.45 (West Coast \$4.85).



"Fill up the wife!"



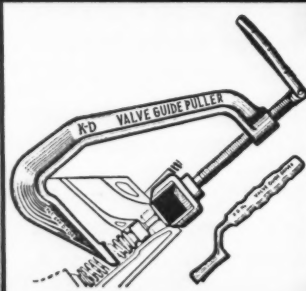
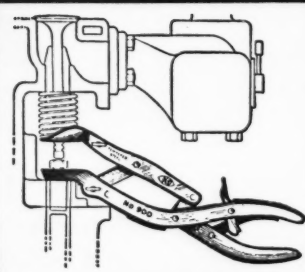
AND WHEN IT COMES TO VALVE LIFTERS



K-D 380 FOR GENERAL SHOP USE

is hard to beat. Strong, versatile, easy to operate. Two sets of adjustable jaws . . . positive over-center lock . . . quick setting hand wheel. Only \$8.10 List.

K-D 900 "HI-OFFSET," for the newer motors. For fast operation and clear view of valves when working under fenders, the 900's the thing. Auxiliary jaws for extra high lift. Only \$2.00 List.



K-D VALVE GUIDE PULLER SETS

for Ford Motors. Pull valve assemblies no matter how tight the guides are stuck! Specially designed, drop-forged screw Pullers which pull directly on the guides . . . straight up! The correct principle. No. 920 Set (Ford 85HP and Lincoln-Zephyr) only \$10.00 List. No. 860 Set (Ford 60 HP) only \$9.50 List.

K-D 600 FOR GENERAL SHOP USE

An old favorite with thousands of users. Hardened, adjustable jaws, positive ratchet lock. Only \$2.50 List.



ASK YOUR JOBBER FOR DEALERS NET PRICES
Complete Catalog Free on Request

K-D MANUFACTURING CO.
Lancaster, Pa.

Legally Speaking

(Continued from page 42)

words "mislead" and "deceptive" the court said:

"It is manifest that a violation of the statute may be committed by making statements in advertising that are merely misleading, that is, tend to lead astray or into error, without any specific intent to deceive, and it has been so decided on a similar Kansas statute.

"The advertisement here in question is of that class. It reads: 'Special sale PDQ tubes 50 per cent off regular first line tube price list.' The natural tendency of this was to cause the reader, if he knew no more than the advertisement told him, to believe that the tubes advertised were first line tubes and were to be specially sold at 50 per cent off regular list price therefor. The fact was that the advertised tubes were not first line but third line tubes, contrary to the implication of the advertisement. The advertisement, although *literally true*, was nevertheless deceptive and misleading in its implications and this is sufficient to bring it under the ban of the statute.

"The fact that a dealer in the trade or other person who knew the truth, would not be led astray does not make it lawful. None of the advertising described in the statute, even though utterly false, could harm one who knew the truth, but such laws are passed to protect the general public who read advertisements and are likely to know nothing of the facts."

What Is Fraud?

A REPAIRMAN seeking relief from the courts for a fraud practiced upon him, may be surprised to find that the unfulfilled promise made to him may not constitute fraud.

"Fraud cannot be predicated upon a promise to do something in the future, but the false representation must relate to past or existing facts," said an Oregon court recently.

But where the promisor, at the time of making the promise has no intention of keeping it, that in itself may be a fraud.

Discussing this, the court pointed out:

"When one promises another to do something in the future as an inducement for the latter to part with his money or property and makes the promise the medium of a deception, and at the time of making the promise the promisor has no present intention to perform, the transaction is fraudulent and the existence of the intention not to perform the promise at the time of its making, makes it fraud."

Making Himself Poor

A FAVORITE device with debtors who want to avoid paying their bills, is to make themselves poor by

transferring all their possessions and assets to someone else. The debtor then has nothing left out of which the creditor can collect.

One variation of this plan is for the debtor to organize a dummy corporation to which he turns over all his assets. Commenting on this arrangement recently the Supreme Court of California said:

"Corporate separate existence will be disregarded where, if it is recognized, it would be to sanction a fraud or promote injustice. For example, a debtor may not evade payment of his debts by forming a corporation which

does not assume the debt and thereafter transferring all his assets to it."

Of course, any form of this scheme whereby the debtor transfers his assets to another person, is a fraud on his creditors. Ordinarily, an equity court will require the "stooge" to return the assets for the benefit of the debtor's creditors. The danger is that the assets may have been dissipated or disposed of by the dummy before the creditors catch up with the situation.

(Continued on page 72)

"OUR Number One CHOICE"

Writes the GREAT LAKES OIL CO., INC.
NIAGARA FALLS, N. Y.

WE HAVE placed in our service stations three of your Number 15 Compressors and they have proven most satisfactory. So much so, that the next compressors we buy for our stations will also be Par.

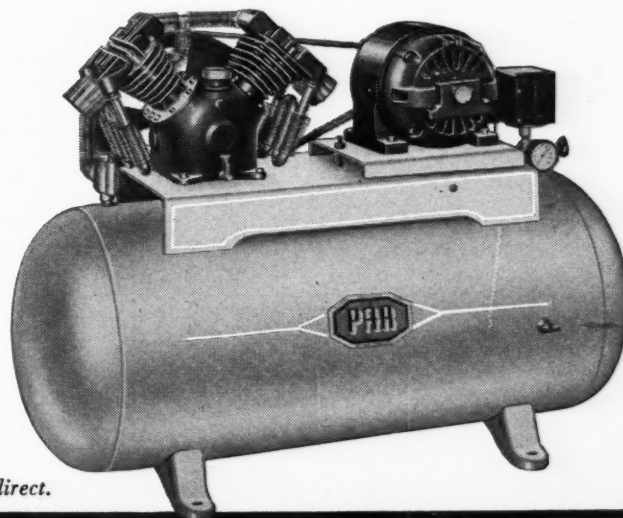
SIGNED *Arthur R. White.*

PAR

Par Compressors are made in 44 models, 17 sizes from 1/4 H.P. to 10 H.P. — horizontal or vertical.



See your jobber or write direct.



MODERN EQUIPMENT CORPORATION • DEFIANCE, OHIO

Forty-five Races Remain on Schedule

Forty-five big car automobile races remain on the American Automobile Association's schedule for the season which closes Oct. 27.

Five of the races are listed for June; July will offer four and brings the opening of the annual Fair season. The busy schedule comes in August and then until the cold weather comes in October the drivers will be bidding several times each week for prize purses totaling from \$750 to \$1,200.

Two national champion classics will

offer from \$5,000 to \$7,500 in prizes. The scales have not been worked out yet but the purses, according to AAA rules, cannot total less than \$5,000 and last year \$7,500 were offered in the dirt track competitions which carried points toward the national title. The next title race comes Aug. 25 at the Wisconsin State Fair at Milwaukee. The third and last title event of the year will be run Sept. 2 at the New York State Fair in Syracuse. Each event will be for 100 miles. For a time the AAA schedule did not show a title event at Milwaukee but the classic was returned to the list in the latest card of events.

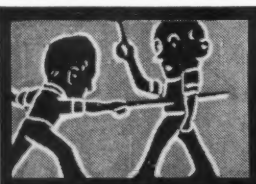
The racing activity will center

throughout the northern states, principally Pennsylvania, New York and New Jersey, until September when the campaign will shift to Virginia, the Carolinas and other Southern territories.

Following is the AAA's complete race schedule for the balance of the season:

June 7—Union (N. J.) Speedway
June 9—Wisconsin State Fairgrounds, Milwaukee
June 9—Williams Grove (Pa.) Speedway
June 16—Langhorne (Pa.) Speedway
June 23—Williams Grove (Pa.) Speedway
July 4—Williams Grove (Pa.) Speedway
July 4—Allentown (Pa.) Fairgrounds
July 21—Williams Grove (Pa.) Speedway
July 27—Delaware State Fair, Harrington
Aug. 4—Langhorne (Pa.) Speedway
Aug. 10—Lewistown (Pa.) Fair
Aug. 17—Washington (Pa.) Fair
Aug. 18—Wisconsin State Fair, Milwaukee
Aug. 18—Williams Grove (Pa.) Speedway
Aug. 22—Wisconsin State Fair, Milwaukee
Aug. 24—Middletown (N. Y.) Fair
Aug. 24—Bedford (Pa.) Fair
Aug. 24—Hamburg (N. Y.) Fair
Aug. 24—Illinois State Fair, Springfield
Aug. 25—Wisconsin State Fair, Milwaukee
Aug. 31—Essex Junction (Vt.) Fair
Aug. 31—Flemington (N. J.) Fair
Sept. 1—Williams Grove (Pa.) Speedway
Sept. 2—Flemington (N. J.) Fair
Sept. 2—New York State Fair, Syracuse
Sept. 2—Virginia State Fairgrounds, Richmond
Sept. 2—Altoona (Pa.) Speedway
Sept. 6—Vermont State Fair, Rutland
Sept. 14—Hughesville (Pa.) Fair
Sept. 15—Reading (Pa.) Fair
Sept. 19—Asheville (N. C.) Fair
Sept. 21—Asheville (N. C.) Fair
Sept. 21—Allentown (Pa.) Fair
Sept. 22—Williams Grove (Pa.) Speedway
Sept. 28—Shelby (N. C.) Fair
Sept. 28—Virginia State Fair, Richmond
Sept. 28—Bloomsburg (Pa.) Fair
Oct. 5—Winston-Salem (N. C.) Fair
Oct. 6—Williams Grove (Pa.) Speedway
Oct. 12—North Carolina State Fair, Raleigh
Oct. 12—Spartanburg (S. C.) Fair
Oct. 19—Southern State Fair, Charlotte, N. C.
Oct. 26—South Carolina State Fair, Columbia
Oct. 26—Wilson (N. C.) Fair
Oct. 27—Wilson (N. C.) Fair

Note—Races are being run every two weeks on Sunday at the Thompson Speedway, East Thompson, Conn.



"dag" in rubber lubes

insures quick, complete penetration

Use a rubber lube containing "dag" colloidal graphite on those engine mountings, squeaky shackles—any rubber part that is noisy. It is harmless to rubber or metal finishes and its minute particle size makes quick penetration to the trouble sure, eliminating the squeaks . . . Acheson worked out the formulas, which have been patented, with "dag" colloidal graphite as the basic part. Any gun, giving a needle spray, may be used to apply these rubber lubricants—they

6 ADVANTAGES
OF A "DAG"
RUBBER LUBRICANT



NON-INJURIOUS
TO RUBBER



NON-
POISONOUS



LONG
LIFE



EASY TO
APPLY



NON-INJURIOUS
TO
METAL FINISHES

are NON-POISONOUS,
NON-INFLAMMABLE,
and the presence of the
solid lubricant keeps the
squeaks away longer—you'll
have no "comebacks" be-
cause of "birdies"—it will
last as long or longer than
the rest of the lubrication
job. . . Selected marketers
blend and package "dag"
colloidal graphite rubber
lubricants under their own
trademarks. We will glad-
ly supply the names of
several such companies.
Send for descriptive folder
giving complete details.

ACHESON COLLOIDS CORPORATION
PORT HURON, MICHIGAN



Diesel Progress

In a recent talk before the Detroit Adcraft Club, Volney Fowler, Detroit Diesel division of General Motors, estimated that there are about 15,000 Diesel vehicles on American highways. This is amazing progress for a development which was in its swaddling clothes but a few years ago. The speaker gave a pointed answer to questions concerning the future of Diesel engines in passenger cars. According to a good engineering estimate it would take about 40,000 miles of operation before the fuel savings in a low-priced passenger car could amortize the first cost of the engine. On heavy duty equipment, the story is quite different. When buses and trucks regularly chalk up 150,000 to 200,000 hard miles per year, they can make money on fuel savings regardless of the first cost of a dependable Diesel.

NEWSTOON



Wallace Crozier of Seattle, Wash., was fined \$15 for having defective brakes on his car, which rolled down a hill and into a plate glass store window. Crozier is manager of a brake repair shop.

K-D Offers Novelty

A departure from the automotive line is evidenced by the introduction of a combination letter opener and magnifying glass by the K-D Mfg. Co., Lancaster, Pa. It has a keen blade with a 2½-in precision lens in the handle, focused to give maximum magnification when laid flat on the print. The width of the lens permits reading a full column-width of type in any telephone book. Its overall length is 9 in., and it is packed in a gift box. Supplied either in solid bronze, statuary bronze or chromium.

Bendable Tail Pipes



Nine sizes of the new Uniflex bendable tail pipe offered by the Everhot Products Co., 2055 W. Carroll Ave., Chicago, Ill., will service 95 per cent of all car models, according to the manufacturer. Pipes can be bent by hand without tools to fit any car. They are made of a continuous piece of non-leaking, vibration-proof convoluted flexible alloy-steel tubing. There are no interlocking, lapping or spiral seams, joints or segments to break, open up, unwind, or come apart, the manufacturer claims.

Who Gets the Title

With another 500-mile International Sweepstakes added to racing's ever-mounting speed records list, the Indianapolis drivers are sharpening their pencils to determine just what they must do to win the sport's national championship title.

Contrary to popular belief, the Indianapolis winner does not become racing champion because of his achievement in the 500-mile grind.

Points are awarded at other designed races and the driver gaining the greatest number of points because of positions won in championship events, including Indianapolis, becomes the No. 1 driver of the year.

Wilbur Shaw will remain current national champion until the close of the 1940 season, because of his title-point margin in the 1939 campaign. Shaw received his championship medal at Indianapolis prior to the start of the annual classic May 30.

Victory at the 100-mile classics at the Wisconsin State Fair in Milwaukee on Aug. 25 and at the New York State Fair in Syracuse on Sept. 2, would give the national title to second

or third place winners of the Indianapolis grind. Other drivers could better their positions in the standing in earning points at Milwaukee and Syracuse.

Here's the AAA point scale from which you can figure for yourself the combination of possibilities under which Indianapolis drivers may better their title positions in gaining points in the two title events yet to be run.

Race Dist.	1st	2nd	3rd	4th	5th	6th
500 Miles	1000	825	675	550	450	375
	7th	8th	9th	10th	11th	12th
	325	275	225	175	125	75
	1st	2nd	3rd	4th	5th	6th
100 Miles	200	165	135	110	90	75
	7th	8th	9th	10th	11th	12th
	65	55	45	35	25	15

Don't Buy Labor SELL it

"That was the best steer I ever got"

OUR slogan to the trade, "Don't Buy Labor—SELL It," has shown thousands of repairmen that it pays handsomely to recondition Fuel Pumps and Carburetors in their own shops.

Hygrade's inexpensive Contain-All Kits for reconditioning these units enable you to keep this work—and the profits—at home.

LABOR IS YOUR BIGGEST ASSET. Every mechanic you hire earns you a profit. When you buy reconditioned products you give this profit to the other fellow.

PUT "IDLE HOURS" TO WORK. There are times when your shop is not working at capacity. Take up the slack by utilizing these periods for reconditioning Fuel Pumps and Carburetors—and turn dead loss into good dollars!

YOU HAVE COMPLETE CONTROL over every job when you use Contain-All Kits. They contain ALL the parts, insuring a satisfactory finished job—with no comebacks from the customer.

Hygrade Products are available through leading jobbers

HYGRADE PRODUCTS CO., INC.
35-35 Thirty-fifth St., Long Island City, N. Y.



HYGRADE

Italian Road Race

Results obtained in the Italian One Thousand Mile road race for semi-stock sports cars are important. The winning B.M.W. sedan, with a non-supercharged engine of 122 cu. in., averaged 103.9 m.p.h. for nearly one thousand miles, put up a lap record (100 m.) at 108 m.p.h., and over the flying kilometre attained a speed of 134.3 m.p.h.

The Alfa Romeo which finished second was only slightly slower and its maximum over the flying kilometre was 120.2 m.p.h. A Fiat of only 34 cu. in. made a lap record at 75 m.p.h.; a 67 cu. in. Fiat established the lap record at 86.4 m.p.h. and a 91 cu. in.

Ferrari accomplished the 100 mile course at 90.7 m.p.h.

The cars had to be in regular production and many of them started in the race with closed streamlined bodies. The winning B.M.W. had a six-cylinder engine of 66 by 96 mm. bore and stroke with two overhead camshafts, a compression ratio of 8-1, from which 125 hp. were obtained at nearly 6000 revolutions. The engine was fitted with three downdraft Stromberg carburetors. Weight of the car was reduced to 1433 lb. by an extensive use of light alloy. The chassis was of light alloy, but the nature of the metal could not be ascertained. Disc wheels were also light alloy.

The sedan four passenger body

weighed only 94 lb. Streamlining was carefully carried out. Door handles and hinges, hood hinges and catches were all invisible; license plates were recessed.

The B.M.W. success is attributable very largely to the favorable power-weight ratio. Alfa Romeo, with six-cylinder, 152 cu. in. engines, having two overhead camshafts and three carburetors and an 8 to 1 compression ratio, obtained 128 hp. at 4800 revolutions. Their total weight, however, was 2494 lb., and this is the explanation of the difference of speed between the German and the Italian cars.

Delage came with two 183 cu. in. push rod engines from which he obtained 135 h.p. at 5000 revolutions. Total weight was 2240 lb. These cars probably were faster than the Germans, but at the last moment the French Government withdrew all permissions for French drivers and mechanics to leave the country and with scratch drivers and mechanics picked up haphazard the cars could not be prepared properly. The German government gave every facility to the national team, a big staff being on the course a month before the race. Field Marshal Goering is the principal stock holder in the B.M.W. company.

Ferrari, who formerly ran the Alfa Romeo racing organization, came to the line with a couple of straight eights of 64 by 60 mm. bore and stroke. These proved very fast, but the standard Fiat axle which was used proved inadequate for racing conditions and both cars fell out near the end.

The popular Fiat "500" of 34 cu. in. piston displacement came to the line with a special S.I.A.T.A. head having pushrod operated valves and a compression ratio of 9 to 1. These motors gave 32 h.p. at 5500 revolutions. Many of these cars were capable of 75 m.p.h. and the winning machine averaged 71 m.p.h. for a distance of more than 800 miles.

Gasoline consumption was 14 miles to the American gallon for the winning B.M.W.

Goodrich Develops "Leaning Tire"

A tire that literally travels on its "ankles" as readily as on its conventional tread surface, is the latest development of the tire division of B. F. Goodrich Co. Known as the "leaning wheel" tire, the new casing is introduced for use on road grading machines which operate in ditches, on inclines or embankments as well as flat surfaces. These graders are equipped with a special type axle to permit the wheels to lean over on either side to provide stability in the grading operations.

Because the tire has no definite shoulder it will ride naturally at any angle without undue wear or strain. The usual tread surface is protected with a heavy, deep, grooved tread to resist side-slip for operations in ditches or on road shoulders. The "ankles" or the side-walls of the tire have radial cleats to prevent slipping and to keep them rotating even when the wheels are working at an angle in muddy going.

SHAKEPROOF LOCK WASHERS



THIS IS A LOCK WASHER!

Ordinary spring-type washers which merely tilt the nut or screw to cause thread-friction are a poor substitute for the positive locking power of Shakeproof Lock Washers. The tapered-twisted teeth of Shakeproof Lock Washers supply three positive locking forces. Strut-action, which prevents any connection from even starting to loosen. Spring-tension,

which causes thread-tension and keeps the locking action constant. Line-bite, which assures positive locking at initial contact. Then multiply this locking power by the number of teeth and you'll appreciate why Shakeproof is, without question, the perfect lock washer for all automotive repair jobs. Ask your jobber for Shakeproof, today!



FREE!

SHAKEPROOF LOCK WASHER CO.

Distributor of Shakeproof Products
Manufactured by Illinois Tool Works

2507 N. Keeler Avenue • Chicago, Illinois

In Canada: Canada Illinois Tools, Ltd., Toronto, Ont.

Copyright 1940 Illinois Tool Works

Free Sample Ring!

Write today for this handy sample ring, which includes both Internal and External types in a variety of sizes. Test Shakeproof yourself!

Headlight Tester

A new Weaver headlight tester that embodies a number of new principles and which is claimed to completely eliminate the variable human factor in this operation has been announced by the Weaver Mfg. Co., Springfield,



Ill. The new instrument, called the "Rayoscope," measures beam candlepower, shows whether the light is aimed high or low and to the right or left, and indicates the exact number of inches it is off proper aim at 25 feet. All this is automatically shown by meter dials and an aiming scale, according to the manufacturer.

Reo Motors Resumes Truck Production

Reo Motors, Inc., resumed production after a lapse of more than a year when the first truck of the new series rolled off the assembly line May 21 in the Lansing plant.

The company expects to turn out 35 trucks per day and will have a payroll of 900 employees. There is a substantial bank of orders to be filled for the more than 700 distributors in this country and abroad. Reo negotiated a \$2,000,000 RFC loan last March to enable the resumption of production after an extensive reorganization.

P. C. Sets Quarter Record

According to Lothair Teetor, president of Perfect Circle Co., 21,900,000 rings were shipped in the first quarter of 1940, thereby establishing a new all-time record. Ring shipments topped the best previous quarter by 19 per cent.

Ford Supports Youth Foundation

A National Farm Youth Foundation has been established in Dearborn, Mich., by the Ferguson-Sherman Mfg. Corp., with the active cooperation of Henry Ford, founder and Edsel Ford, president of the Ford Motor Co. Educational courses in farm management and engineering, as well as practical training in the operation of modern farm equipment, will be made available at once to at least 20,000 young men on American farms, between the ages of 18 and 25.

"Young men of the farm have not

realized their opportunities on the home soil," said Henry Ford in announcing his participation in the Foundation, "and the young men of the city have not appreciated the career a farm offers. As a result, farming has been neglected."

"The family system of farming has suffered and we want to see it rebuilt. As a matter of fact, the Foundation seeks to help the young man of the farm to realize his aspirations for happiness and prosperity."

Jobs will go to 58 of the scholarship students and hundreds more will find places in industry and business associated with farming, according to announced plans.

The first 29 awards are contracts under which the students selected will be employed a year at the Ferguson-Sherman plant in Dearborn at a salary of \$150 a month. The next 29 students will receive one-year contracts to work with the company's distributors at \$125 a month. An additional 725 will be placed on an honor roll for first selection as other openings occur in plant and offices of the company, its distributors and dealers. The primary objective is to train young men so that they may become proficient, and experienced, in solving the problems common to the business concerns and the farm operators of the local community.



★ Get This
ATTRACTIVE
Display Stand
FREE

Plus Our Technical Bulletin Service and Sales Helps

Display Stand is 24" wide, 9 1/4" deep and 55" high overall—of sturdy all-welded, steel construction, set up ready for service. Beautifully finished in bright orange duco, with attractive metal sign at top and 4 shelves for systematic and attractive display of ignition parts stock.

ACT NOW and take advantage of this unusual combination Deal that will help stimulate your sales and increase your profit. **MAIL COUPON BELOW.**

To get you acquainted with NIEHOFF APPROVED QUALITY IGNITION PARTS and to enable you to share the experience of hundreds of repair shops and garages that are cashing in on this fast-moving parts line, we give you this attractive display stand **ABSOLUTELY FREE** with the purchase of a well-rounded stock of active moving parts, at a very small investment. Stock will enable you to service all popular makes of cars. In addition, we will give you without cost a most valuable Tune-Up Chart and other sales helps.

If you will qualify for our Service Agreement through your local Jobber, you will receive our technical bulletin service containing the latest authoritative data on motor Tune-Up. **DON'T DELAY—ACT NOW!**

Mail the **COUPON TODAY** for full details and learn how easily you can obtain this Profitable Combination Deal that will put **EXTRA DOLLARS** in your pocket.

C.E. NIEHOFF & CO.
4919 LAWRENCE AVE., CHICAGO, ILL.

BRANCH: 1342 S. FLOWER ST.

LOS ANGELES, CALIF.

MAIL COUPON TODAY

C. E. NIEHOFF & CO.
4919 Lawrence Ave., Chicago, Ill.

Please send full details telling how I can get this display stand FREE.

NAME

ADDRESS

CITY

STATE

Legally Speaking

(Continued from page 67)

Independent Contractor

THAT a repairman has no liability for wrongful acts or injuries inflicted by one working for him as an independent contractor was the point made in a recent Oklahoma case. There, a truckman hauling for a business house struck and injured a woman, who subsequently sued the business house.

Said the court:

"An independent contractor is one

who is engaged to perform a certain service for another according to his own manner and method free from control and direction of his employer in all matters connected with the performance of the service except as to the result or product of the work. In determining the question whether a truckman is an independent contractor or an employe, the right of the employer to control the truckman is the most decisive.

"There is no evidence here showing that the defendant business house attempted to exercise any manner of supervision or control over the truck-

man insofar as the details of operation of the route were concerned or over the goods being transported. Hence the truckman was an independent contractor and the business house is not liable for any wrongful or negligent acts committed by him."

If the truckman had been an employe, the business house would have been fully responsible for the injuries to the woman struck by the truck.

What the Contract Says

WHEN a repairman signs a contract which turns out to have a meaning different from that which he expected, he is likely to be "stuck" with what the contract says. It's not what he thought or intended but the words of the document that count. The Supreme Court of Oklahoma recently put it thus:

"Contracts must be construed as made by the parties, even though the result may appear to be harsh, and the intention of the parties must be ascertained from what they have placed in the written contract.

"Of all the rules relating to the construction of contracts the one of most importance is that the intention of the parties at the time of the contract must control. If that intention is clearly and unequivocally expressed in the written contract, the literal words thereof must generally prevail. If the contract or any part thereof is reasonably susceptible to different meanings, it then becomes necessary to resort to other established rules of interpretation and construction."

If there is the slightest doubt about the meaning or the practical or legal effect of a document which a repairman is asked to sign, he should submit it to his attorney for an opinion *before* he signs it, not after.

Goods "On Demonstration"

WHEN a business man leaves goods at a prospect's home or place of business "on demonstration" or for inspection, what is the prospect's responsibility for their protection against loss and damage while they are in his possession?

Discussing such a situation recently, a Federal court said:

"While the goods were in the prospect's home, it was not his duty to insure them from fire or burglary, and no liability for their loss or damage would have attached except from gross negligence. Nor in the circumstances was it the duty of the prospect to return the goods to the business house to which they belonged. That duty rested on the business house."

In the case before the court a business house had left certain items in a prospect's home for inspection, with the prospect's permission. According to the court's opinion, a business man who leaves goods or equipment with a repairman "on demonstration" or for inspection runs the risk of their loss.

**On our Payroll
but they work
for YOU!**



NEW life for the "Electrical" branch of your business! This will be a reality for YOU when you avail yourself of our FREE "Dealer Co-operation Service."

Here's the plan in a nutshell. One of our "good will" men calls on you from time to time. His mission is to aid you from the merchandising standpoint.

He gives you practical suggestions—puts up wall posters—applies "decals" to your doors or windows—and sees that you have a complete set of our FREE Dealer Selling Helps.

He also re-labels jars where necessary — resorts parts that have become misplaced — and cleans up your stock generally. Lastly, but vitally important, he furnishes you with our latest Technical Service Bulletins, Catalogs, Price Sheets, etc., and posts you on new items essential for up-to-date coverage. And all of this is FREE!

This is only one of many features of our extensive Dealer Help Plan. Let us tell you how easy it is to get ALL of the valuable features of this sales-building program, FREE.

STANDARD MOTOR PRODUCTS, INC.

Main Office and Factory
3732 Northern Blvd., Long Island City, N. Y.

"The ABILITY to serve well is as important as the WILL to do so."

**A Dealer
Co-operation
Service That
Boosts Your
Ignition
Parts Sales**

**"STANDARD" AND
"BLUE STREAK" LINES**
IGNITION PARTS
BATTERY CABLES
AUTOMOTIVE WIRE



Window Regulator Repair Kit

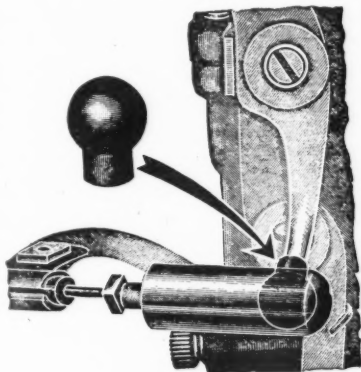
A new repair kit that enables the serviceman to rebuild faulty window regulators quickly and easily is announced by the L. F. Kreger Mfg. Co.,



550 W. 35th St., Chicago, Ill. The Kit No. 314 services all Ford cars and trucks; Kit Nos. 315 and 316 are designed for Chrysler, Dodge, DeSoto and Plymouth cars.

Throttle Connector Ball

One of the new products introduced by Champ Items, Inc., 6191 Maple Avenue, St. Louis, Mo., is the No. 966 choke and throttle rod insulator rubber ball for the 1939 and 1940 Ford, Mercury and Lincoln-Zephyr cars. This rubber bushing is made of a spe-



cial oil-and-grease-resisting material, and will not become spongy and allow the connection to become disengaged, according to the manufacturer. It slips over the new type choke and throttle rod couplings at the carburetor.

Brake Tester for Standards Bureau

The Bureau of Standards has installed a new inertia-type machine for testing brake lining, designed by Rolla H. Taylor and William L. Holt, with the advice and cooperation of members of the Brake Lining Manufacturing Association, says the Bureau's Technical News Bulletin. Although smaller, it is similar in operation to machines used in the industry. A heavy flywheel is brought up to the desired speed, the power is then shut off and the flywheel stopped by means of a brake mechanism which employs the lining under test. The energy absorbed per square inch of lining in

stopping the flywheel is comparable to the energy absorbed in stopping an automobile. Tests of brake lining include two types of measurements: (1) Determination of the coefficient of friction of the lining under various conditions, such as when the lining is hot or cold, wet or dry; and (2) determination of the rate of wear.

Four-cylinder Operation of Ford V-8

In Great Britain, owners of Ford V-8, and of eight-cylinder cars generally, now are being offered the op-

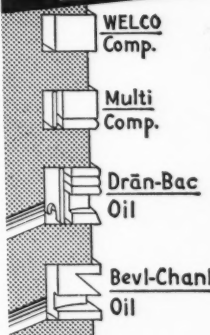
portunity to save on their annual tax and on their fuel costs by having four of the eight-cylinders rendered inoperative. Since the recent increase in the horsepower tax, the amount levied on a Ford V-8 amounts to £37 10s annually. With only four cylinders operating (two in each block) the car, of course, will have less acceleration and less maximum speed, but it is said to still travel quite comfortably at 45-50 m.p.h. The cost of the conversion is £12, and the sponsors of the conversion scheme—who attend to the registration formalities—figure that the combined savings on tax and fuel during the first year will amount to £14.

RING SPECIALISTS DEPEND ON WEL-EVER



*"The
Difference
is in the
Bank
Book"*

"Drān-Bac 'H' Sets"



Sensational claims for ring performance are commonplace with Drān-Bac "H" Sets! That's why it pays to sell and install "H" Sets. Every installation spells p-r-o-f-i-t, a bigger balance in the Bank Book because it's a profit you keep. You don't "nibble" on it for comeback correction.

Depend- able!

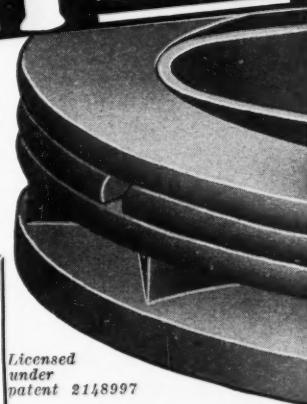
Daily more and more ring specialists find dependability in "H" Sets. "H" Sets are

flexible, full of LIFE! They stay young, deliver the pep and power and oil economy that satisfies. Further, they permit correct cylinder lubrication and actually s-l-o-w-d-o-w-n cylinder wall wear! "H" Sets will lick 90% of all ring jobs you get. Each ring is engineered to the motor... individualized to the piston, ring groove depth and width.

Shopowners: Insist on "H" Sets
Jobbers, Ring Specialists:
Get our proposition!

FOR SEVERELY WORN JOBS

We recommend our "D" Super-Set where car-owner will not have rebore job. Rings for all grooves.



Licensed
under
patent 2148997

For Re-Bore Jobs

We suggest our "BW" Set where customer insists on 1-piece rings for re-bore jobs. Rings for all grooves.



Write or Wire Today for Proposition

Your territory may be open

WEL-EVER

TRADE MARK

REGISTERED

THE
WEL-EVER
Piston Ring Co.
TOLEDO, OHIO

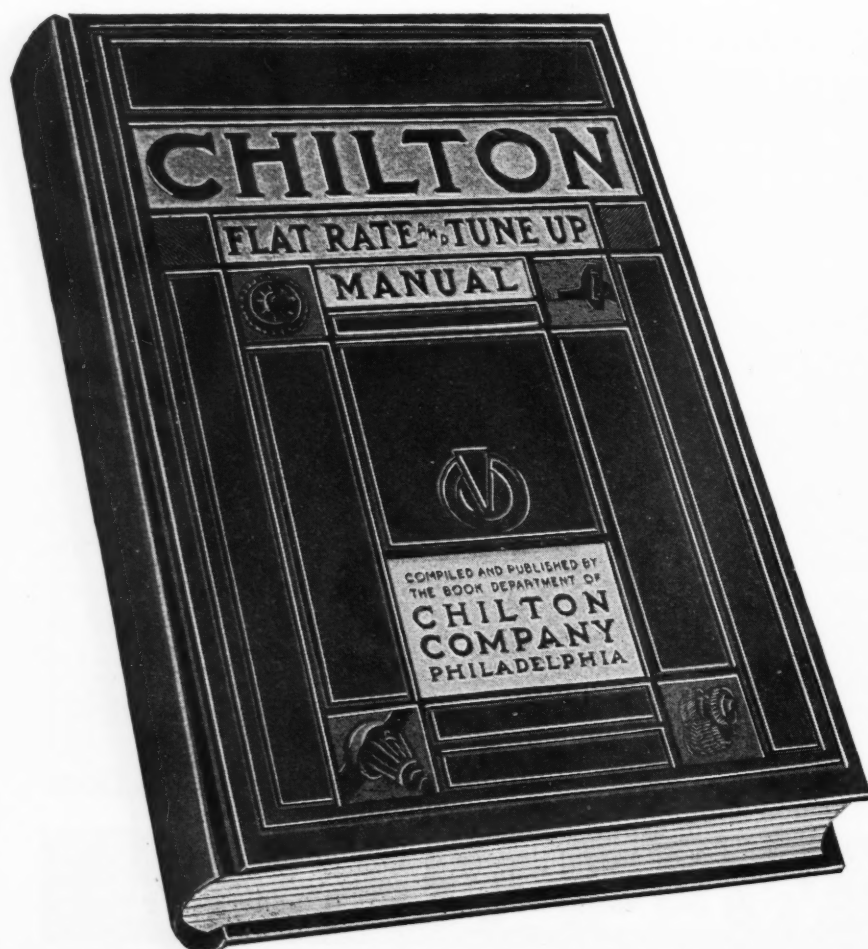
Now Chilton Supplies

3 MANUALS in ONE *at the same price ~ \$6⁰⁰*

CHILTON'S 1940 FLAT RATE

contains:

- A Manual of Flat Rate Labor and Material Prices
- A Manual of Service Procedure on Maintenance, Trouble-Shooting and Tune-Up
- A Manual of Brake Maintenance, Trouble-Shooting and Adjustments



As always—Chilton again leads in value, and new necessary information.

Here's VALUE

the Greatest Chilton ever offered!

- Interchangeability of Truck Units Data
- Completely redesigned Carburetor Section
- Bearing Oil Pressure Tests
- Torque Wrench Readings
- Cause of Brake Trouble—Methods of Correction
- Hydraulic Valve Lifters and Silencers
- More Parts Numbers and Prices. More Body and Frame Parts.

You Will Need

The Chilton Table that shows you the number of makes and models of Trucks that have Interchangeable Parts, and what those parts are, so you can shop around and get the best prices.

The most complete Carburetor Adjustment and Tune-Up Information ever supplied.

For some months now the Trade has requested Bearing Oil Pressure Tests. Here they are. Of great value also will be the Torque Wrench Readings.

Likewise new is the information on Vacuum Advance, which enables you to make a complete check of the types and models of these units in general use.

These are some examples of the new and important features that the Chilton 1940—14th Edition—will bring to you.

The 1940 Manual will bring you the usual Chilton completeness in covering everything needed by repair shops, and the accuracy that has made the Chilton Flat Rate and Service Manual the preferred authority in thousands of independent and car dealer repair shops.

*Wait for The Chilton Man,
or write—Chilton Company, 56th &
Chestnut Streets, Philadelphia, Pa.*



on the Pocketbook!

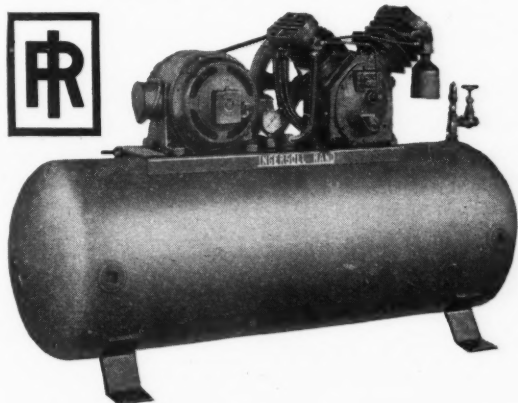
● "Say, Bill, that new Ingersoll-Rand compressor of mine doesn't use anywhere near as much current as my old machine.

"The Ingersoll-Rand man told me it would save money, so I just checked up on him. It was easy, as my compressor is on a separate meter.

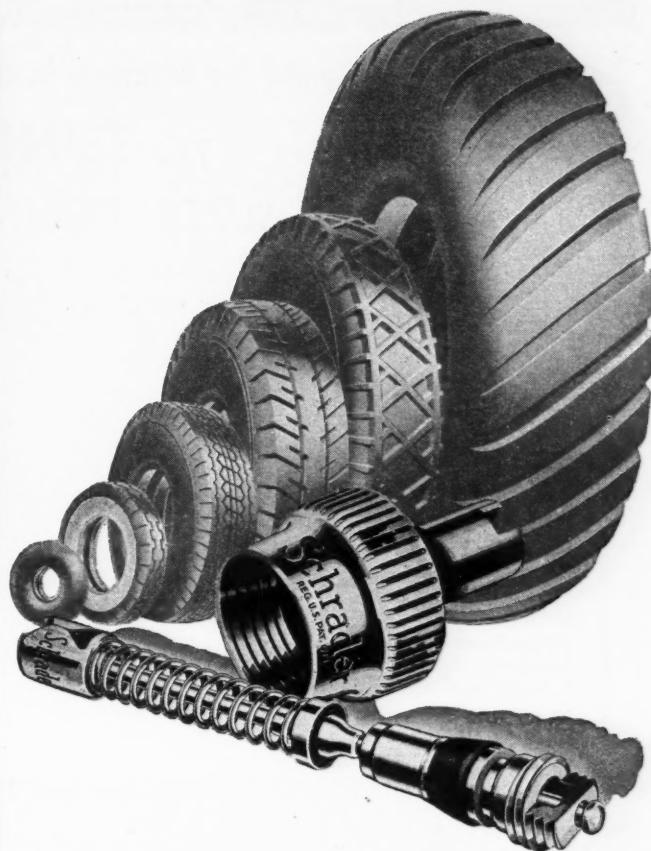
"Well, you'd hardly believe it, but my electric bills from that meter are a whole lot less each month than they used to be.

"John and Bob are planning on buying new machines pretty soon, aren't they? Well, you just tell them to come up here and I'll show them the best compressor there is anywhere.

"And you might tell them to ask the Ingersoll-Rand jobber for a catalog. There is a lot of good dope in it."

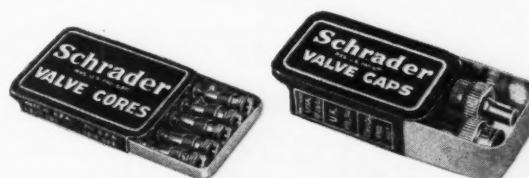


Ingersoll-Rand
881-3 11 BROADWAY, NEW YORK, N. Y.



THESE TWO PARTS will fit ANY standard tire valve!

Whether your next customer brings in a truck, a tractor, a passenger car or a bicycle tube for repair, all you need are these two units to service the tire valve. It takes you less than a minute to replace the old core and cap. Standard tire valves can be serviced right on the vehicle. You can do it without removing the tube or even jacking up the wheel. You are spared needless work and give your customers the prompt, economical service that helps hold their business.



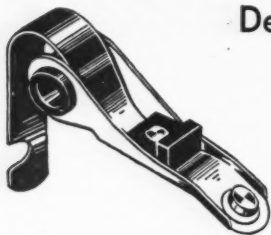
Schrader
REG. U.S. PAT. OFF.

TIRE VALVE CORES and CAPS

A. SCHRADER'S SON

BROOKLYN, N. Y.

Division of Scovill Manufacturing Company, Incorporated



Designed for Efficient, Lasting Service . . .

The **TUNGSTEN** SUPER CONTACT POINT

Product of skilled engineering . . . highest quality materials . . . accurate construction . . . this is the TUNGSTEN SUPER CONTACT POINT. Modern high-speed, high-compression engines throw greater strain on contact points, causing pitting and overheating. With the 60% greater disc area of TUNGSTEN SUPER CONTACT POINTS, overheating and pitting are eliminated, heavier amperage loads can be handled safely. The superiority of the SUPER CONTACT POINT over the regular point affords easier starting, smoother performance and a longer service life.

Write today for complete details.

Other PRODUCTS by **TUNGSTEN**

Brushes
Bushings
Coils
Condensers
Cutouts
Distributor Parts
Gears
Horn and Light Relays
Magneto Parts
Starter Parts
Switches
Voltage Regulators
Miscellaneous Parts



TUNGSTEN CONTACT MFG. CO.
NORTH BERGEN, NEW JERSEY

School Days

(Continued from page 22)

into effect the things he has learned in class room work and lecture periods.

The school is a development of the educational field work which the company has been doing for several years with the use of portable equipment in a trailer. But this educational work was necessarily limited for various reasons and the conclusion was reached that the service men would fare better if they could get away from their places of business and give undivided attention to school work. The course lasts three weeks and is limited to employees of Auto-Lite cen-

tral distributors, service distributors and service stations.

As the members of each new class come to Toledo, they are given a get-acquainted dinner at one of the leading hotels, followed by moving pictures showing interesting operations in some of the 21 plants which Auto-Lite operates in 18 different cities.

The course covers so much ground in such a short period that students find it necessary to devote practically all their spare time to study in order to obtain, upon examination, a rating satisfactory to their employers and to the Electric Auto-Lite Co. At the conclusion of the course each student's work is analyzed and a letter is written to his employer giving the student's school rating and suggestions

for continuing his studies. Careful attention to the individual student is assured by limiting classes to 12 members.

Fundamentally, the purpose of the school is to enable Auto-Lite service men to back their own practical experience with useful technical knowledge. Since the beginning of the automobile industry service station operators and service men have been provided with manuals covering tests and service procedure. This information has almost invariably been given in cold figures, with no reason for their use. The Auto-Lite Service School, on the other hand, familiarizes service men with the fundamental reasons upon which these various tests and service procedures are based—with the result that the men are given a better understanding of their work, and are better equipped to handle whatever conditions may be encountered in the field.

At the beginning of the course, each student is given a leather-bound binder with his name stamped on the front. At the conclusion of each lecture, students are given a printed copy of the text of the lecture, with illustrations, charts, and diagrams and once a man has taken the course, all additional material of this nature goes to him automatically. Space is provided in the binders for notes by the students, and since the school releases additional information to them as it is available, the books become valuable for future reference.

Chek-Chart

Appoints Turner

Van Turner, Editor of Chexall, has been appointed sales promotion manager of Chek-Chart Corp., Chicago. The Chexall division editorial staff is being enlarged and Turner will handle his new duties, in addition to all the activities of Chexall.

Van Turner joined the Chek-Chart organization in 1936 with a wide background of experience in trade paper editorial work. He was formerly connected with the Book Department of Chilton Co. as editor of the Flat Rate Manual and other technical books, and with the Standard Technical Co. in a similar capacity. Subsequent to that, he handled service complaints and adjustments for Chevrolet at the Philadelphia zone office.

It PAYS to Sell
THE NEW
SEIBERLING
SAFETY TIRE



- It stays cooler!
- It lasts longer!
- It's easy to sell!

THE SEIBERLING RUBBER COMPANY
Akron, Ohio

Built Especially for the Collision Department!

G. A. C. PERFECTION POWER-PLUS HYDRAULIC JACK

The only double-acting PUSH - PULL hydraulic jack supplies direct pull for the repair of box channels, rear trunk racks, door posts, etc.

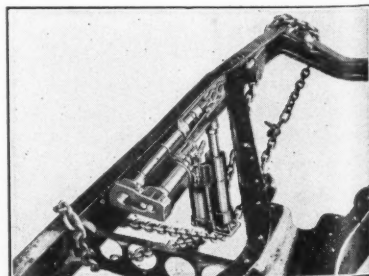
Two units handle any type of body aligning, frame work, fender straightening, knee action adjustment, steel running board straightening. G.A.C. alone given you these advantages.

- Fills 100% with any amount of handle travel.
- Swivel handle allows operation in any position, even upside down.
- Immediately adjustable.
- Safety valve prevents overloading, bending or breaking.

Write today for catalog sheets fully describing the complete line of equipment especially designed for use in the collision department.

G. A. C. MFG. CO.

ASHLAND, OHIO





The SAFE All-Glass MAZDA Lamp You've Been Waiting to Sell

The nationally advertised GLASEAL Mazda Unit is hermetically sealed in one piece Glass mirror precision coated with vaporized aluminum—like the mirror surfaces used in large telescopes.

At last we can announce the first SAFE GLASEAL Driving and Passing Lamp designed especially for its use as an auxiliary lamp. Its powerful beam gives you daylight safety—approximately 3 times more light on the road. Only 30 watts. No excessive battery drain.

This lamp is not a headlight unit in a new housing, but a completely redesigned GE MAZDA GLASEAL System of correct size and power for Do-Ray's powerful new lamp. It's never out of focus, never dims from dirt or tarnish, because filament and reflector are hermetically sealed inside the unit.

The 6 1/4" housing is of heavy chrome-plated brass, on a theft-proof malleable iron bracket. Special built-in compensating device designed to accommodate automatically any sealed beam unit regardless of variation in thickness. Available with passing or driving beam—singly or in pairs.

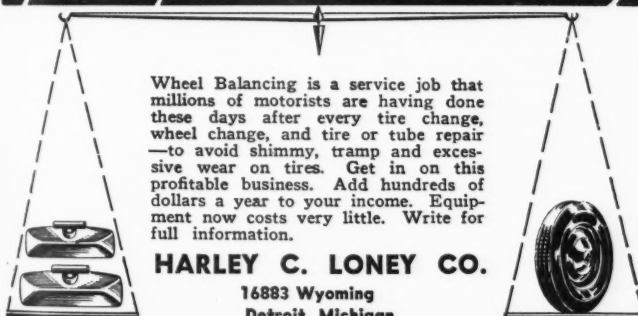
Ask your jobber
or write

DO-RAY

SAFETY LIGHTING AND REFLECTING DEVICES

DO-RAY LAMP COMPANY 1458 S. Michigan Ave., Chicago

Get Hef to Wheel Balancing!



Wheel Balancing is a service job that millions of motorists are having done these days after every tire change, wheel change, and tire or tube repair—to avoid shimmy, tramp and excessive wear on tires. Get in on this profitable business. Add hundreds of dollars a year to your income. Equipment now costs very little. Write for full information.

HARLEY C. LONEY CO.
16883 Wyoming
Detroit, Michigan

L & H Wheel Balancing Weights



**GENUINE TENITE
REMOTE CONTROL
STEERING COLUMN
SHIFT LEVER KNOBS**

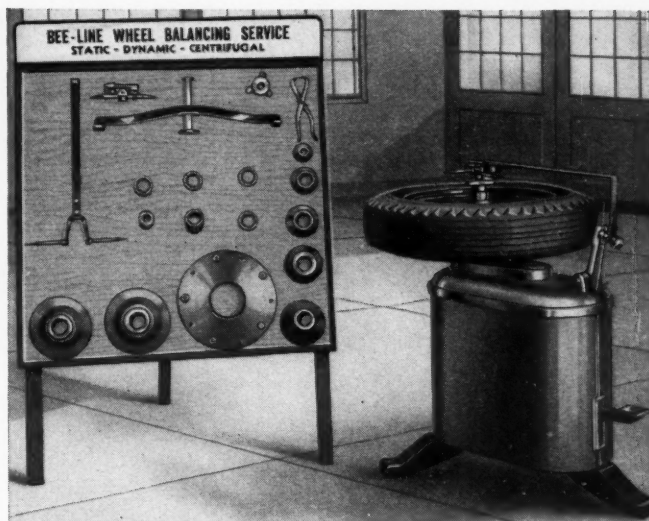
Three distinctive designs.
Four attractive genuine Tenite colors.

- No. 61—No insert—45¢ List.
- No. 62—C—Chrome ring—50¢ List.
- No. 63—A—Novelty Crystal insert—60¢ List.
- No. 63—C—Chrome insert—50¢ List.

Bushing required to complete installation 9¢ List.

SINKO TOOL & MFG. CO.

351-371 N. CRAWFORD AVE. CHICAGO, U.S.A.



Investigate the New No. 7 Chassis Aligner

This machine is so easy to handle that it speeds up all frame, axle and chassis aligning jobs to a new high in profits. It is only

\$1245

F.O.B. Factory, complete with all necessary tools. Also available on easy terms.

Small Investment—Large Profits

The new BEE-LINE Static, Dynamic, Centrifugal Wheel Balancer has now proved highly profitable in hundreds of service garages. You can charge 75¢ to \$2.00 per wheel for a few minutes' labor, plus a good profit on weights. The BEE-LINE System of Wheel Balancing, upon its center of gravity and in a horizontal plane, with self-registering gauges, results in super accuracy.

The BEE-LINE Wheel Balancer is equipped with the fool-proof "BALANCE METER"—which is free from all complicated electrical mechanism, such as contact points, etc. There is practically no get-out-of-order or wear-out. The price is remarkably low—only \$245.00 F.O.B. Factory; or it can be purchased on our self-liquidating finance plan.

Write today for complete catalog on our profit-making service equipment—sold direct from factory at great savings to you.

BEE-LINE COMPANY Dept. MA6 Davenport, Iowa

DAN, THE RUBBER MAN, SAYS:



**I'VE GOT
WHAT IT TAKES**

**TO STOP
RUBBER
SQUEAKS**

100% SAFE!

RUGLYDE penetrates the tightest fittings... furnishes a tough, viscous film which lubricates and preserves rubber. Contains *dag Colloidal Graphite. Lasts the life of a lube job.

Safe on Service Man! Non-flammable—non-poisonous.

Safe on Car Finishes! Won't harm the finest lacquers.

Approved by leading oil companies and rubber manufacturers for rubber parts. Sold by your jobber in 8-ounce refillable dispensers and in gallons.

RUGLYDE
FOR RUBBER SHACKLES AND FITTINGS
PENETRATING RUBBER LUBRICANT
STOPS SQUEAKS
PRESERVES AND LUBRICATES
CONTAINS *dag COLLOIDAL GRAPHITE



AMERICAN GREASE STICK CO.
MUSKEGON, MICH.

For rubber door seals, hood lacing, and other parts requiring surface lubrication—use Door-Ease Stainless Stick Lubricant. Won't soil clothing or upholstery. Won't harm rubber or car finish.

EIS Super 40 Brake Fluid



"Tomorrow's Brake Fluid TODAY"

Gives Your Customers 100% EFFICIENCY

EVERY can of EIS "Super 40" you sell becomes a powerful factor in building good will and volume for you. "SUPER 40" enables you to give the car owner what he is entitled to—100% BRAKE FLUID EFFICIENCY!

EIS "Super 40" is insurance against corrosion—contains no water or acid—has an exceptionally high boiling and low freezing point—and doesn't evaporate. Mixes with all brake fluids. Used and recommended by car and truck manufacturers.

3 oz. cans to 54 gallon drums

Write for full particulars if your jobber can't supply you

EIS MANUFACTURING CO., INC.
"The Complete Brake Parts Line"
Middletown, Conn.

Smash-Proof

CREEPERS

ANNOUNCES a model equipped with brake which is practical in every way. Your jobber will soon have them.

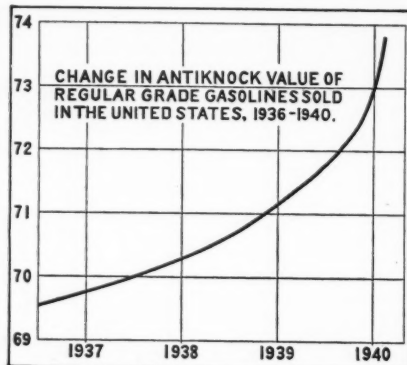
HULBERT CREEPER CO.
ASHTABULA, OHIO

NEW SpeedWay 1 1/2" No. 89 DRILL

Full size, full weight, full capacity. Specially wound, high torque 115 V Universal 500 r.p.m. SpeedWay Drill Motor. Forced air cooling, oilless bearings, new natural grip breast plate and removable side handles. Streamlined die cast case. If your dealer can't supply, order direct on 10 day trial.



"I don't care when your car is coming—you can't reserve parking space!"



This graphic indication of the change in average U. S. gasoline during recent years shows why new emphasis is constantly being placed on engine tune-up, in order to take full advantage of the power possibilities of the gas. Chart was prepared by AC Spark Plug Division of General Motors Corp.

Road Testing

(Continued from page 21)


at Philadelphia for about 500 miles and over about 1200 miles more on the trip to Florida, were given the Florida-Road-Test lubrication service and the usual manufacturer's mechanical adjustments. This same procedure was applied to one of each of the three makes of cars that had already been driven over 100,000 miles each. These six cars then were driven, one after another, over a measured one-mile course at Daytona Beach with electric-eye timing, in both directions to eliminate wind effect.

The overall combined average top speed for the three cars, Chevrolet, Ford and Plymouth, was 79.83 m.p.h. for the new cars and 77.95 m.p.h. for the tested cars which had already been driven 103,000 miles each, indicating a loss in top speed of only 1.88 m.p.h. or 2.35 per cent. Taking the three makes of cars individually, one showed a loss in top speed of 3.48 per cent, another of 1.84 per cent, and the third of 1.81 per cent.

In concluding his talk Doctor Delbridge remarked that the acceleration and top-speed data both gave convincing evidence that with these 1940 cars, the fuel, the motor oil, the lubrication service and the mechanical maintenance are far more important than the age of the car, measured either in months or in miles.

TRADE MARK
NOC-OUT
HOSE CLAMPS

THE HOSE CLAMP WITH THE THUMB SCREW



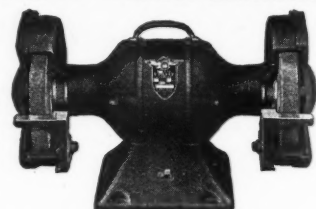
For fast, dependable hose connections, use NOC-OUT Hose Clamps . . . standard in the automotive industry for many years for their leakproof, trouble-free sealing features. Quick tightening thumb screw provides equal pressure all around. Type "A" Adjustable . . . fits many hose sizes. Type GBB heavy duty, solid band for Booster Brakes. Type HP for all high pressure air and gas lines.

Sold by dealers and jobbers everywhere.

WITTEK MFG. CO.
4305 W. 24th PL., CHICAGO, U.S.A.

6" "UTILITY" BENCH GRINDER

6,
7 or
8-in.



Ball bearing. Alternating current
THE UNITED STATES ELECTRICAL TOOL CO.
CINCINNATI, OHIO



The finest warning signal made—Musical, but powerful—Instant Response, but delicate when desired.

Sound Range 1 to 10 Miles
New Remote Controlled Spot Light Ready.
Avoids drilling car body.

Write for literature
BUELL MANUFACTURING CO.
2983 Cottage Grove Ave., Chicago, Illinois

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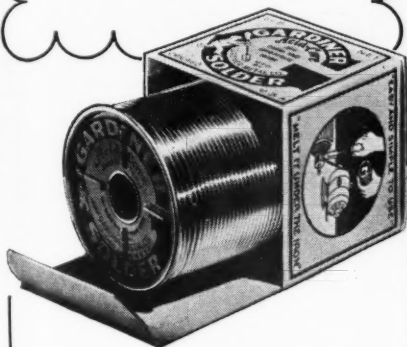
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New Branch: 1239 Osborne St., Montreal, Canada



PAUL GARRETT

. . . recently elected a vice-president of General Motors Corp. For the past nine years he has been director of public relations for the corporation. Also elected as a vice-president was Harlow H. Curtice, general manager of the Buick Motor division of GM.

Repairs on Time

(Continued from page 23)

the plan and automotive parts and automotive parts and equipment manufacturers have been invited to tie-in this financing feature with their own promotion plans.

Similarly, Commercial Credit offered a plan for the financing of shop equipment and building improvements through jobbers and through the co-operation of 97 manufacturers and more than 1300 jobbers financed \$15,000,000 in equipment sales since the introduction of the plan August, 1936.

Millions of dollars of additional repair business can be netted on an easy-pay financing plan, it is estimated. Economy-minded owners who can be shown the prudence of keeping cars well-serviced can now be approached with a new weapon in the sale of major repairs—the low-cost budget plan for automobile reconditioning.

Frank J. Haaske, long experienced in the automotive after-market, and who introduced the Commercial Credit Automotive Equipment Plan to the trade, is working with Mr. Mathews in the development of the new Automobile Reconditioning plan.



Lighter—Shorter
20% More Power

See your Jobber or write to: Van Dorn Electric Tools, 727 Joppa Road, Towson, Maryland.

"Van Dorn"

The "Red-Headed" Portable Electric Tools

Gives you
ALL the parts



MASTER CYLINDER KIT



YOU won't have to run back and forth to your jobber any more for extra parts when you're working on master cylinders. These handy EIS KITS give you everything you need for a complete repair job—Valve Seats, Head Gaskets, Locks, etc., in addition to the regular parts furnished. A valuable time saver for the busy shop.

From your jobber or write us direct if he can't supply you.

EIS MANUFACTURING CO., INC.
"The Complete Brake Parts Line"
Middletown, Conn.

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CHARLOTTE SOUTHERN (WOMAN DRIVER)



SOUTHERN
FRICTION MATERIALS CO.-CHARLOTTE, N.C.

NEW STREAMLINED "KING" TESTER MT-625 for only \$320.00 Just see what it does!



Other Models at Lower Prices

● SOLD ON DEFERRED PAYMENTS ●

The trade wanted a streamlined Testing Unit that was "tops" in both performance and appearance, and here it is. It is a beautiful job that will impress your trade, and it will make every conceivable test. It makes all Motor and Ignition tests. The "KING" Electronic Cam Angle Meter (patent applied for) tests and adjusts distributors quickly and accurately. The "KING" Electro-Tach (or R.P.M. Indicator) simplifies timing of the ignition and carburetor adjusting. The Exhaust Gas Analyzer will save your customers money because it will enable you to get them MORE MILES PER GALLON on their gas. Meter indicates both air fuel ratios and percentage of fuel loss with three colored sections indicating lean, idling and rich. A special feature is the large 7" meter which is extremely accurate and will show your customers many of the answers to your tests. The All-electric Spark Plug Tester (patented) does not require compressed air. Here is a real tester bargain, and it will soon pay for itself in any shop. Only by comparing it, feature by feature and dollar by dollar, will you fully appreciate what a marvelous bargain it is.

Ask your Jobber or Write us Jobber's Name

Valley Electric Corp.
9123 INMAN AVE. CLEVELAND, OHIO
KING Good Products Since 1914 **KING**

NEWSTOON



Accused of driving an automobile so fast he set it afire, F. D. Barron was arrested recently in Jersey City, N. J. According to the arresting officer, Barron was driving 80 m.p.h., once reached 89 and made a turn at 75. While Barron was being booked, it was discovered that the muffler of his car was red hot and had set afire to the upholstery.

Driving and Passing Lights

The K-D Lamp Co., Cincinnati, Ohio, has announced the introduction of the K-D Solar Driving and Passing Lamp and Adverse Weather Lamps. They are of the sealed type of metal and glass construction. The driving and passing lights, Model No. 861, are designed to be installed in pairs and operate through the foot switch in conjunction with the regular headlights. The driving light is on with the country or driving beam, and the passing light is on with the lower or passing beam. A switch on the dash makes it possible to switch off these lights when driving in the city and the auxiliary lights are not needed.

Model No. 865 Solar light is designed to penetrate fog, and is of slightly smaller size. A special lens with the top and bottom sections of amber and the center section of crystal glass is used.

Pines Opens N. Y. Office

To facilitate service to its customers, the Pines Winterfront Co., manufacturer of truck and tractor radiator shutters, has opened an Eastern office at 11 West 42nd Street, New York City. This office is in charge of Sid G. Harris.



SIMPLEX "LL" PISTON RINGS

Smash-Proof

CREEPERS

ANNOUNCES a model equipped with brake which is practical in every way. Your jobber will soon have them.

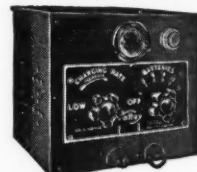
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ASHTABULA, OHIO

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